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NOTICE TO READERS.

This Journal is devoted to the advancement of PHARMACEUTICAL KNOWLEDGE and to the advocation of a MORE THOROUGH EDUCATION and PRACTICAL TRAINING for all persons engaged in PREPARING and DISPENSING medicines, drugs and chemicals.

It embodies a large amount of information EXTREMELY VALUABLE TO APOTHECARIES, DRUGGISTS and PHYSICIANS—comprehending, in fact, a faithful record of the development of PHARMACEUTICAL SCIENCE AND INVENTION both in Europe and America, during the period of its issue, commencing with 1829.

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MEETINGS OF STATE PHARMACEUTICAL ASSOCIATIONS.

STATE.	TIME.	PLACE.	LOCAL SECRETARY.
Alabama,	May 11,	Birmingham,	G. M. Saine.
Illinois	June 8,	Rockford,	H. C. Porter.
Indiana,	June 8,	Lafayette,	D. Holt.
Kansas,	June 9,	Emporia,	D. W. Morris.
Kentucky,	May 5,	Bowling Green,	Wm. Turner.
Massachusetts,	June 2,	Boston,	Henry Canning.
Maryland,	June 1,	Annapolis,	L. Byers, Hagerstown.
Minnesota,	June 9,	Minneapolis,	
Missouri,	June 15,	Sweet Springs,	G. H. C. Klie, St. Louis.
Mississippi,	May 18,	Jackson,	H. F. West, Fayette.
Nebraska,	May 11,	Omaha,	C. J. Danbach.
New Jersey,	May 19,	Newark,	R. H. Vansant, Trenton.
New York,	May 8,	Rochester,	C. H. Haskin.
Ohio,	June 2,	Springfield,	Chas. Ludlow.
Pennsylvania,	June 8,	Lebanon,	Geo. R. Ross.
Tennessee,	May 19,	Knoxville,	
Virginia,	May 11,	Alexandria,	Edgar Warfield.
West Virginia,	June 8,	Wheeling,	C. Menkemeller.

The *Ohio* Association offers two prizes for the best papers read, viz.: a Troemner prescription balance worth $25.00, and a combination suppository mould. The *Texas* Association is expected to remain in session four days.

The 16th Annual Meeting of the N. J. Pharmaceutical Association will be held at the Continental Hotel, Broad Street, Newark, N. J., Wednesday and Thursday, May 19th and 20th, at 10.30 A. M. each day. A full attendance of members is earnestly requested. The local pharmacists will spare no pains in making this meeting a grand success in every particular. Ample space for exhibitors. R. J SHAW, Corresponding Secretary.

Pennsylvania Pharmaceutical Association.—The Ninth Annual Meeting of this Association will be held in the Court House, Lebanon, Tuesday, June 8th, commencing at 2 P. M. A room for the exhibition of drugs, pharmaceutical preparations and apparatus has been secured in Fisher's Hall. There will be reduced rates at the hotels. Orders for railroad tickets at excursion rates can be had on application to the Secretary, J. A. MILLER, Harrisburgh, Pa. For further information relative to the meeting, address GEORGE R. ROSS, Assistant Secretary, Lebanon, Pa.

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In order to make a complete set of the American Journal of Pharmacy more valuable to those possessing or consulting it, the Committee on Publication have decided to offer the remaining copies of the General Index to the first 42 Vols., from its commencement, Dec., 1825, to Nov., 1870, inclusive, at the REDUCED PRICE of

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THE AMERICAN
JOURNAL OF PHARMACY.

MAY, 1886.

PHARMACEUTICAL NOTES.

(Contributed by the School of Pharmacy of Purdue University.)

INTRODUCTION.—Contributions for the advancement of science may be expected from an institution engaged in purely scientific instruction; and a school devoted to pharmaceutical education should likewise do what is possible to advance the interests of the profession by investigating the character of the drugs supplied in trade, the processes best adapted for their preparation, and the methods of testing their genuineness and purity. Pharmaceutical students should learn their own responsibility for the advancement of their chosen profession, and should be taught how to conduct such investigations as may be within their reach. Articles not otherwise credited are by the undersigned.

The following notes represent an effort to do what we could. As far as practicable the work of students has been credited to their several names; but the theses have been freely condensed by the compiler. The seven members of our first graduating class are all represented by name, while the work of juniors also will be found under "Potassii Bitartras."

Some remarks upon the standard of purity prescribed for "Potassii Nitras" will apply to many other salts.

Hoping to continue this work from year to year, the Faculty will gladly receive suggestions from any persons interested in pharmacy upon such topics as may need investigation.

ROBT. B. WARDER.

School of Pharmacy, Lafayette, Ind., April, 1886.

I. ACIDUM OLEICUM.—BY L. H. SCHULMEYER.

Four samples were examined. Nos. 1–3 were from different makers. No. 4 was prepared in our own laboratory by precipitating

the sodium salt with lead acetate, washing the precipitate, dissolving in benzine, decomposing with hydrochloric acid, washing to remove lead, etc, and warming in water-bath to remove benzine.

Ten gm. of each sample were dissolved in twice the volume of alcohol, and titrated with normal solution of caustic soda, using phenol-phthalein as indicator. Theory requires 35·4 c.c. Solution in alcohol gave no indication of fixed oils, but the samples were not free from palmitic acid, especially No. 3, which still had the odor of lard oil. Numerical results are given below.

	Specific gravity.	Vol. of normal NaOH required.	Percentage of oleic acid.
No. 1	·91	31·8 c.c.	87
No. 2	·89	28·6 "	81
No. 3	·88	22·4 "	63
No. 4	·90	35·1 "	99

II. Acidum Sulphurosum.—By John Kennedy.

Preparation.—The method of the Pharmacopœia gave unsatisfactory results, as sulphuric acid was found in excess in the product, while the sulphurous acid was deficient. Much better results were obtained by reducing with copper. When the gas was passed upwards through a cylinder filled with lumps of moist charcoal, and then through a wash bottle, the solution obtained was free from sulphuric acid; and by surrounding the receiver with snow, the strength was easily brought to 12 per cent. The cost of the copper cannot be considered an objection, for one pound of the metal (costing 30 cents) will theoretically yield nearly four pounds of blue vitriol, worth ten to twelve cents per pound.

Examination of Commercial Samples.—Specimens procured from druggists gave the following results:—

	Specific Gravity.	Per cent. of SO_2.	Per cent. of H_2SO_4.
No. 1	1·008	1·68	Varying amounts.
No. 2	1·028	3·28	
No. 3	1·036	3·25	
No. 4	1·003	None.	0·54
No. 5	1·006	None.	0·91
No. 6	1·023	None.	2·67

Even if accurate tests cannot be made, a pharmacist should always note whether his preparation has a strong odor of SO_2 before dispensing it.

Volumetric Estimation.—After making the tests noted above, an effort was made to find a ready method of titrating sulphuric in presence of sulphurous acid. A sample of sulphurous acid free from sulphuric was titrated both with caustic soda and with iodine; but the former resu't was too high. This discrepancy was probably due to dissolved carbonic acid, which could not be expelled by heat without loss of sulphurous acid also. It then remained either to oxidize the sulphurous acid first with decinormal solution of iodine in presence of starch and titrate with decinormal soda (deducting for both sulphuric and hydriodic acids formed) to determine the sulphuric acid, or to expel the sulphurous with any carbonic acid by heat before adding the alkali. In the first case, the two acids were determined in one portion, the iodide of starch being nearly decolorized with heat before adding the soda; by the latter method separate portions were required, and at a temperature of 70° C. several hours were required to expel all the sulphurous acid.

To test these methods, solutions of sulphuric and sulphurous acids were titrated separately, and measured quantities were then mixed to be titrated together.

25 c.c. H_2SO_4 required 25·6 c.c. decinormal HNaO, either in presence or absence of iodide of starch; hence, this volume contained 0·125 gm. H_2SO_4.

25 c.c. SO_2 required 8·4 c.c. decinormal solution of iodine; hence, this volume contained 0·027 gm. SO_2.

Measured quantities were then mixed and both constituents determined in the same portion as follows:—

	H_2SO_4.		SO_2.	
	Taken.	Found.	Taken.	Found.
No. 1	·125	·125	·027	·027
No. 2	·250	·254	·027	·027
No. 3	·125	·129	·054	·054

Mixtures were also prepared, and the H_2SO_4 determined after expulsion of SO_2 by heat, as follows:—

	H_2SO_4.		SO_2.	
	Taken.	Found.	Taken.	Found.
No. 4	·125	·125	·027	·027
No. 5	·250	·250	·027	·027

These results are considered satisfactory; but after developing

these methods the time was too short to procure and test other commercial samples.

III. ANTIMONII ET POTASSII TARTRAS.—BY E. G. EBERHARDT.

Five commercial samples, and one of my own preparation (No. 6), were examined with the following results. With the exception of No. 2, which was dirty, all were soluble in the prescribed quantity of water, showing the absence of cream of tartar or oxide of antimony. Nitrate of silver gave no reaction for chlorides, and ferrocyanides of potassium showed the absence of iron, etc. Special care was taken in the application of Fleitmann's test for arsenic:

	$BaCl_2$.	Am_2Ox.	Fleitmann's Test.
No. 1	Slight opalescence.	None.	Trace.
No. 2	None.	Trace.	"
No. 3	"	"	"
No. 4	"	"	"
No. 5	Slight turbidity.	"	Considerable.
No. 6	None.	None.	Slight trace.

We notice that all contain arsenic, but in my opinion only No. 5 contained objectionable amounts. For the preparation of No. 6, sulphide of antimony, containing only traces of arsenic, was boiled with hydrochloric acid as usual, filtered, boiled to expel sulphuretted hydrogen, and then poured into water with constant stirring. Only a small amount of the arsenic present in the sulphide is dissolved and re-precipitated. The oxide, after washing with water, was treated with ammonia (which would tend to remove the arsenic still further) before it was dissolved with bitartrate of potassium; but the pharmacopœial test is so delicate that 0·0001 per cent. of arsenious sulphide gives a distinct reaction, while 0·01 per cent. makes a decided black spot. So rigid a test for tartar emetic seems needless; for the far less delicate test (by precipitation of silver arsenate) is prescribed in the Pharmacopœia for purified sulphide of antimony, thus allowing considerable traces of arsenic to escape detection and be incorporated with antimony pills.[1] This subject is further discussed in the next article.

[1] In my own tests of tartar emetic (*Proceedings A. P. A. for* 1885, p. 480), the paper moistened with solution of silver nitrate was exposed for a few moments only to the escaping gas, and arsenic was not observed. No doubt the test is usually applied with less care than Mr. Eberhardt has taken. R. B. W.

Attempts were made to titrate tartar emetic with caustic soda, the oxide of antimony being precipitated. When litmus was used as indicator, the results were too low. With phenol-phthalein, four titrations gave results varying from 100·6 per cent. to 100·9 per cent. As the end of the reaction is somewhat difficult to distinguish, alkali was added to a decided red color. 1 c. c. normal NaOH represents 0·332 gm. of tartar emetic. This method cannot be recommended, unless for special cases, as to indicate the amount of gross adulteration. Such a case is reported by A. H. Jackson [see *Druggists' Circular* xxix, 233 (Nov. 1885)], who found 40 to 70 per cent. of sulphate of potassium in tartar emetic designed for manufacturing purposes.

IV. Antimonii Sulphidum and Antimonium Sulphuratum. —by E. G. Eberhardt.

Of five samples procured in Lafayette, Ind., only one was found to be genuine; the rest did not yield a trace of antimony, but seemed to consist of magnesian limestone mixed with coal dust.[1]

"Purified sulphide of antimony" is prepared by macerating five days with ammonia. Hager recommends the use of carbonate of ammonia, to avoid loss of antimony; but the amount of antimony dissolved with the arsenic by water of ammonia is too slight to tinge the yellow color of the sulphide of arsenic, when the latter is re-precipitated from the ammoniacal filtrate by acid.

Sulphurated antimony is prepared from the purified sulphide by dissolving in caustic soda and precipitating by dilute sulphuric acid. A sample was precipitated from a very concentrated solution, of very dark brown color and with brisk effervescence. A second sample was precipitated after diluting the alkaline solution; this was much lighter, and little sulphuretted hydrogen escaped during precipitation. The former doubtless had the larger percentage of oxide, and the darker color must be attributed to its denser condition. To avoid these variations, certain uniform conditions, as those prescribed in the Pharmacopœia, should be strictly observed.

The only use of purified sulphide of antimony mentioned in the

[1] Eight samples of black antimony from various towns in Ohio, Indiana, Illinois and Michigan, all proved to be spurious, as described above; while five samples from New York, Philadelphia and Boston were genuine. Details will be found in *Proceedings A. P. A.* for 1885, p. 479. R. B. W.

Pharmacopœia is the preparation of sulphurated antimony. The former, it seems, might readily be discarded, and the latter might be made more directly by treating the native sulphide in hydrochloric acid, and precipitating with sulphuretted hydrogen. By this process the prolonged maceration with ammonia can be omitted, and a nearly definite chemical substance results. The most apparent objection is the possibility of dissolving arsenic in hydrochloric acid, and this danger was subjected to careful examination. A sample of ordinary sulphide was purified by the pharmacopœial process; another portion was dissolved in hydrochloric acid and re-precipitated by sulphuretted hydrogen. Both products met all the requirements for "purified sulphide," though both contained arsenic, as shown by Fleitmann's test. The comparative experiments were repeated upon a mixture of sulphide of antimony with about 5 per cent. sulphide of arsenic. Both products gave about equally strong reactions with Fleitmann's test. The process was repeated with these products, and the reactions were again about equal but very slight. Judging by comparative tests, they contained less than 0·01 per cent. of arsenious sulphide. This would seem to indicate that arsenic is eliminated by precipitation as readily as by maceration with ammonia in the manner prescribed.[1] In applying the proposed method to the manufacture of sulphurated antimony, some expense may be saved by passing the sulphuretted hydrogen from a portion of fresh ore into the acid solution of another portion.

The question also arises whether the traces of arsenic allowed are deleterious. Sulphurated antimony is alterative and emetic; alterative in small doses, and this effect would be increased by a small quantity of arsenic; and even the larger emetic doses would not contain a dangerous quantity of arsenic; for any harm from the latter would be obviated by the emetic effect of the antimony.

---

[1] Further experiments are desirable to determine the conditions for obtaining the best results; but there can be little doubt that arsenic will dissolve most slowly during the first part of the operation, while sulphuretted hydrogen is given off copiously. Lang has investigated the condition of equilibrium for the solution and precipitation of sulphide of antimony [*Ber. d Chem. Gesel*, xviii, 2714–2724 (Oct. 1885)]; and the fundamental principles of "action of mass" are likely to find more general recognition in the future, as applied to both manufacturing and analytical operations. R. B. W.

V. Calx Sulphurata.—by M. Jay.

The Pharmacopœia specifies that this preparation shall contain at least 36 per cent. of CaS, but the directions for testing with sulphate of copper are very misleading. Lime itself precipitates copper from its solution; hence, dilute acid should be added with the pharmacopœial test, in order to dissolve any copper not precipitated as sulphide. Even then, we only learn whether or not the sample contains less than the required percentage, while a little additional trouble ensures results by which different samples can be accurately compared.

Tests were made of several published *volumetric methods for estimating sulphides*, depending upon—

1. Complete precipitation by solution of zinc.
2. Reduction of ferric to ferrous sulphate, and titration with permanganate.
3. Partial precipitation of an arsenite as As_2S_3, and titration of residual arsenic.

Decinormal solutions were prepared containing—

Sulphate of zinc dissolved in excess of ammonia (14.345 gm. $ZnSO_4.7\,H_2O$ to the liter);

Permanganate of Potassium (adjusted to be equivalent to decinormal oxalic acid);

Iodine; and

Hydrochloric acid.

Other solutions used were—

Dilute sulphide of ammonium, freshly made, of which 20 c. c. were used for each titration;

Alkaline solution of arsenious acid, of about 1 per cent.; and

Bicarbonate of soda of known strength.

1. Sulphate of zinc was cautiously added from a burette to 20 c. c. of sulphide of ammonium. A drop of the mixture was placed upon filter paper from time to time, close to a spot moistened with test solution of acetate of lead; and when no dark stain was at once produced by contact of the fluids, the reaction was considered complete. A stain was noticed after drying some minutes, even when the zinc was in excess. As the mean of two concordant titrations, 14.85 c. c. of decinormal zinc solution were required for complete decomposition of the sulphide.

2. A mixture of 20 c. c. of sulphide, with excess of ferric sulphate and dilute sulphuric acid was digested half an hour, and then titrated with permanganate, requiring 14·73 c. c. to give a rose tint.

3. Ten c. c. of solution of arsenic were mixed with 20 c. c. of the sulphide, and acidified by the addition of 45 c. c. decinormal solution of hydrochloric acid. The whole mixture was diluted to 250 c. c. and filtered. 100 c. c. (or two-fifths) of the filtrate were made alkaline by the requisite quantity of solution of bicarbonate of soda, and 4·8 c. c. of solution of iodine were then required to oxidize the arsenious acid still present; the whole filtrate would therefore have required $\frac{5}{2} \times 4{\cdot}8 = 12{\cdot}0$ c. c. of iodine; while 10 c. c. of the original arsenic solution required 21.5 c. c. iodine; hence the arsenic precipitated as sulphide would have required $21{\cdot}5 - 12{\cdot}0 = 9{\cdot}5$ c. c. of decinormal iodine. In thus comparing a sulphide with iodine, we must refer to the equations,

$$4\,I + 2\,H_2O + As_2O_3 = 4\,H_2O + As_2O_5, \text{ and}$$
$$6\,HCl + 3\,Am_2S + As_2O_3 = 6\,AmCl + As_2S_3 + 3\,H_2O;$$

it is readily seen that the same quantity of arsenic that requires four times the atomic weight of iodine, would require three times the molecular weight of a sulphide; and the atomic weight of the former represents three-fourths times the molecular weight of the latter. But since sulphur has a combining power of two, we take half the molecular weight for a normal solution of a sulphide, and the atom of iodine represents three-half times this amount. Hence, 9·5 c. c. of decinormal solution of iodine (which represents the arsenic precipitated by the sulphide) would represent $\frac{3}{2} \times 9{\cdot}5 = 14{\cdot}25$ c. c. of a decinormal solution of sulphide.

The results of the three methods of titration may now be compared; the amount of sulphide present in 20 c. c. of the solution used, when compared with decinormal solution, was found equivalent to—

14·85 c. c. by titration with zinc.
14·73 " " " permanganate.
14·25 " " " iodine.

This agreement is considered satisfactory, and the first method was adopted for further use. 1 c. c. decinormal solution of zinc represents 0·0036 gm. CaS; but this salt was treated with ammonia before making the titration.

0·36 gm. of a *commercial sample* (presented by the Mallinckrodt

Chemical Works) required 43 c.c. of the zinc solution, and, therefore, contained 43 per cent. of sulphide.

The following experiments in the *preparation* of calcium sulphide were interrupted by the close of the term. Two specimens were prepared (as directed in the Pharmacopœia) by mixing 90 gm. of sulphur with 100 gm. of lime, and heating to low redness in a crucible with the lid luted on. 0.36 gm. of each product, after treatment with ammonia, required 16 and 18 c.c. standard zinc solution respectively, indicating 16 and 18 per cent. of CaS. The lime was not perfectly fresh and it is probable that sulphur escaped with moisture or carbonic acid; yet the product satisfied the test as described in the Pharmacopœia.

An attempt was then made to reduce sulphate of calcium by igniting two hours at a low red heat in a current of coal gas. The product was darkened by the separation of carbon, and contained 26 per cent. of sulphide.

A fourth preparation was made in like manner, substituting hydrogen for coal gas to avoid the deposit of carbon. After two hours' ignition, this contained less than 0·2 per cent. of sulphide; after three hours further ignition in hydrogen, it contained only 2 per cent. CaS.

Unfortunately, there was no time for further experiments with various reducing agents and temperatures;[1] and these experiments are recorded to indicate further lines of investigation.

VI. Chloral.—by R. D. Westenfelder.

Four samples of commercial chloral hydrate were examined. Besides several tests prescribed in the Pharmacopœia, one gram of each was decomposed by caustic soda, the excess of alkali being after-

[1] T. S. Dymond prepared a sample of light pink color, containing 58 per cent. CaS, by igniting 7 parts of sulphate of calcium with 1 part of powdered wood charcoal, as directed in the British Pharmacopœia. See *American Druggist*, xiii, 208 (Nov. 1884). Should there be any reason to suppose that the medicinal value is due to any other ingredient than the monosulphide (as the editor of the *American Druggist* believes), this fact must be duly considered. Preliminary experiments were made by Mr. Jay upon specimens of ammonium sulphide which had undergone changes with age, and probably contained some thiosulphate as well as polysulphides. With such a mixture the three volumetric methods gave widely discordant results; but a combination of all may be useful in distinguishing the several ingredients of sulphuretted compounds. R. B. W.

wards determined volumetrically by one-fifth normal oxalic acid. The results are as follows:—

	Boiling point.	Solidifying point.	Per cent. chloral hydrate found by titration.	Reaction with nitrate of silver.
No. 1..... Neutral.	98° C.	49·8°	100·0	Clear.
No. 2..... Acid.	98°	48°	98·5	Distinct opalescence.
No. 3..... Slightly acid.	98°	48°	98·0	Clear.
No. 4..... Acid.	97°	48°	99·3	Distinct opalescence.

All were completely volatilized when heated on platinum foil, were free from blackening when warmed with sulphuric acid, and yielded no iodoform in testing for alcoholate.

Nos. 1 and 3, in saccharoid masses, were more readily soluble in water than No. 2, which was in crystals.

Numerous experiments convince me that chloral hydrate is compatible with alcohol in presence of bromides of potassium, sodium or ammonium. The following mixture gave no precipitate:—

Potassii bromidum,
Chloral hydrate.....aa..... gr. 90
Alcohol (94 per cent.)..... ℥ii.
Aqua..... ℥iv.

VII. Cimicifuga.

Some doubt having been expressed in regard to the crystallizable principle announced by Conard in 1871, his process was carefully followed; and though several pounds of the well-preserved drug were used, no crystals could be obtained. The result was confirmed by Prof. Coblentz in his examination of cimicifugin. See Lloyd's *Drugs and Medicines of North America.*

VIII. Gylcerinum.

Twenty samples were tested and conformed very nearly to the requirements of the Pharmacopœia, though a very slight excess of moisture is indicated in several instances. One sample had a disagreeable odor; one also had some color, and gave distinct reaction with silver nitrate within half an hour. The manufacturers maintain a high standard of excellence, and retailers, so far as observed, do not adulterate the goods in their stores. The full paper, describing in detail the methods of examination adopted and the character of the several samples, will be found in *Proceedings A. P. A.* for 1885, p. 486, and in *American Druggist* for October, 1885.

(*To be concluded in the June number*).

LABORATORY NOTES.

By A. H. Cohn, Ph.G.

(Read at the Pharmaceutical Meeting, April 20th.)

Hydrargyri Iodidum Viride.—Having an opportunity to prepare mercurous iodide according to the method of the Pharmacopœia, several specimens were purchased from retail pharmacists and tested for mercuric iodide.

Three samples were examined, and all were contaminated, more or less, with mercuric iodide. The following test was applied to detect the mercuric salt.

A definite quantity of the powder was shaken with alcohol. The filtrate was evaporated upon a watch crystal between 70° and 80° C.

Specimen 1 contained ·5 per cent. of mercuric iodide.
" 2 " ·3 " " " "
" 3 " ·2 " " " "

The specimen prepared by myself according to the Pharmacopœia contained no mercuric salt. No doubt most mercurous iodide sold in retail stores has been kept for some time, and consequently the mercurous iodide is changed into the mercuric, as in some places I noticed it not protected from the light.

Magnesii Citras Granulatus.—Of this preparation three specimens of different manufacture were obtained, and all were found to be contaminated, more or less, with tartaric acid. The following are some of the tests given by the Pharmacopœia:

1. On addition of ammonium chloride to the aqueous solution of the salt, a portion of the liquid, when mixed with excess of solution of ammonium phosphate and water of ammonia, should produce a white crystalline precipitate, soluble in acids.

2. On mixing another portion with test solution of chloride of calcium, supersaturated with water of ammonia and filtering, the filtrate deposits a white precipitate on boiling.

3. The saturated aqueous solution of the salt, when mixed with a saturated solution of potassium acetate and some acetic acid, should not yield a white crystalline precipitate (abs. of tartrate).

The first test was answered by all the specimens. None of the specimens answered the second and third tests. The third test given proved that there was tartaric acid in all of them.

A quantitative test was made, according to test three (3), with the following results:

No. 1 contained 9.77 per cent. of tartaric acid.
" 2 " 19.42 " " " "
" 3 " 31.5 " " " "

The acid tartrate of potassium, formed on mixing the saturated solutions of potassium acetate and the magnesium citrate, was tested for tartaric acid in the following manner: The bitartrate of potassium was neutralized with sodium hydrate, forming the soluble sodium and potassium tartrate; then silver nitrate was added, forming silver tartrate. To this precipitate one drop of ammonium hydrate was added to redissolve the silver tartrate, and the solution was heated slowly, upon which the silver mirror was formed on the sides of the test tube.

Potassium was tested for in two of the specimens, but with negative results.

A test was also made for sulphuric acid, and the three samples gave the precipitate with barium chloride.

The amount of sulphuric acid was estimated in numbers "one" and "two," with the following results:—

No. 1 contained 7·07 per cent. of sulphuric acid.
No. 2 " .699 " " " "
No. 3 " a small trace.

Another sample of the salt was prepared by the writer according to the Pharmacopœia, with a fair result, and answered all the tests required by the U. S. P.

Diastase.—By E Bourquelot (*J. Pharm.* [5], xi, 367–372).—Diastase is widely distributed in nature, both in animals and plants. Most physiologists admit that malt diastase and that of human saliva determine the saccharification of starch, of glycogen, and of certain dextrins; but some maintain that these compounds possess other properties. The author, however, shows that the inversion of cane-sugar ascribed to the action of saliva diastase is really due to the invertin secreted by microphytes present in the saliva; the same action caused by malt diastase is due to invertin secreted by fungoid growths which can be found on the malt grains. The author maintains that all the diastases considered are identical.—*Jour. Chem. Soc.*, 1885, p. 927.

BISMUTH CITRATE.

By R. Rother.

The profession of pharmacy doubtless accept it as a fundamental fact of their vocation that pharmacy is not chemistry, although practical chemistry may be the root of it. Now even the scientific part of pharmacy is utterly concrete. But chemistry itself is only an abstract-concrete science, and, therefore, essentially distinct from mathematics which is an abstract science *par excellence.* An abstract science pure and simple deals only with space and time relations, whereas concrete science treats of the relations among things. In abstract science theory and fact are identical. But in concrete science both theory and fact are only approximate. It therefore seems like a slight comprehension of the meanings of words to affirm in all seriousness that pharmacy should be as exact a science as mathematics. When balances and manipulative skill can readily apportion not merely up to the molecule, but to the restless atom, will be the proper time to look into the mathematical accuracy of pharmacy.

It is now also believed that there is a more prevalent activity in operative pharmacy than heretofore, and that the manifestation of such spirit is due to better chemical knowledge among the craft. There will always be some whose mental trend diverts their activities into peculiar channels, and as the whole aggregate augments, their numbers will also correspondingly increase. It can, however, be shown from *a priori* grounds that although the actual number may be greater their totality will be comparatively smaller. It is, however, questionable whether there is such a leaning towards the presumed accuracy. If, as is also thought, universal distress, or rather growing avarice, is the incentive to productive energy, it only shows that the rectifying factor is merely of secondary import. The aim appears to be not so much towards an ideal purity as the ready acquisition of the greatest amount of available product, that is real substance. General experience, however, goes to show that there is ultimately no gain in this particular field of operative pharmacy, and that its scope is incredibly restricted. In this connection the British apothecaries are at present considerably exercised over the shortcomings of their new Pharmacopœia, and incidentally the writer has been adversely criticized on his process for preparing bismuth citrate. At the very outset the writer had observed in connection with this process that a considerable opacity resulted when the bismuth citrate thus prepared is treated with

ammonia. The writer credited this turbidity to the presence of bismuthyl chloride, with which the commercial nitrate is known to be contaminated. On a later occasion it was thought desirable to ascertain its relative amount and incidentally its identity. Hence 200 grains of the citrate was mixed with some water and treated with ammonia in excess. The mixture was set aside and when the turbidity had firmly subsided the clear liquor was decanted. The residue was repeatedly washed and finally dried. It was found to weigh 2½ grains. Consequently it amounted to one and a quarter per cent. The dry substance had a dingy white appearance. When heated in a dry test tube it evolved some water but no very distinctive odor. The residue on further heating to redness at first turned brown and finally became light yellow. The unheated body did not dissolve in dilute nitric acid even on boiling, it however readily dissolved in cold strong nitric acid. When this solution was diluted with water and treated with ammonia the characteristic bismuth hydrate was precipitated. On treating the clear supernatant liquor with barium chloride and nitric acid a very distinct sulphuric acid reaction became evident. On adding argentic nitrate to the dilute nitric solution of the body an abundant white curdy precipitate formed. This on washing readily dissolved in ammonia water from which solution nitric acid promptly liberated it. On exposure to light the precipitate became deep purple tinted. These results showed that the insoluble residue is chiefly bismuthyl chloride contaminated with sulphate. The precipitation of bismuth hydrate from its nitric solution by means of ammonia shows the absence of citrate as also does the non-appearance of empyreuma on incineration. Its relatively small amount further shows the phenomenal purity of American subnitrate of bismuth.

It thus appears that the Scotch apothecary did not examine the bismuthyl citrate which he proclaimed with such confidence. His result is surely not an encouraging "outcome of better chemical knowledge."

In conclusion the writer will say without arrogating any importance to himself that the Revision Committee of the U. S. Pharmacopœia showed rare discretion in not permitting a slight impurity or prejudice to stand in their way of adopting a practical and efficient process.

Boric Acid in Offensive Urine.—An English physician says he has met with no case of offensive urine (intestinal-vesical fistula excepted) that ten or twenty grains of boric acid, given every three hours, would not cure. —*Canadian Practitioner.*

NANCE BARK.

By Ferdinand Holberg, Ph.G.

(Abstract from a Thesis.)

Being unable to ascertain the botanical origin of this bark,[1] I can only state that the tree yielding it is indigenous to Mexico, and that the bark is largely used in that country for tanning purposes. The following investigations were made in the chemical laboratory of the Philadelphia College of Pharmacy:

The bark is seen in pieces which are from 8 to 16 inches long and ¼ to ½ inch thick; externally it is grayish brown, warty, transversely wrinkled and deeply fissured, and has a thick, corky layer; internally it is brownish red, wrinkled and striate from prominent bast fibres; the transverse fracture is splintery, and the longitudinal fracture smooth.

The powdered bark lost on drying 12·4 per cent. of moisture, and yielded 6·8 per cent. of ash, of which 28·17 per cent. was soluble in water, 67·25 soluble in hydrochloric acid, leaving an insoluble residue of 4·58 per cent.

The result of the proximate analysis was as follows:

Extracted by petroleum spirit: crystalline principle	1·85
Extracted by ether: resin and crystalline principle	4·87
Extracted by alcohol: tannin, glucose, etc	28·26
Extracted by water: glucose, coloring matter, etc	3·15
Extracted by soda: albuminoids, etc	2·58
Extracted by hydrochloric acid: calcium oxalate	2·73
Cellulose (after treatment with chlorine)	34·48

The crystals obtained from petroleum spirit were feathery, white, soluble in absolute alcohol and strong ether, dissolved in sulphuric acid with a yellow color, melted at 176° C., and did not react with alkaloidal reagents. The ether extract was mostly soluble in water, the insoluble portion dissolving in alkalies with a dark red-brown color. Alkaloids could not be detected, but the aqueous solution rendered alkaline yielded to petroleum spirit a crystalline principle which was readily soluble in water, was not affected by alkaloidal reagents, and did not reduce Fehling's solution.

[1] In a list of plants published in Dondé's Botanica, Náncenes is stated to be a Malpighia, probably M. glabra, *Lin.* The malpighiaceæ are confined to tropical regions and are mostly strongly astringent, their barks, and in some cases also the wood, being frequently adapted for tanning.—Editor.

The tannin was estimated by boiling 15 gm. of the powdered bark with water, precipitating the filtrate with gelatin and washing and drying the precipitate; it weighed 3·929 gm., showing the presence in the bark of 26·2 per cent. of tannin.

NOTE ON THE REACTIONS OF COCAINE SALTS WITH POTASSIUM PERMANGANATE.

By A. B. Lyons, M. D.

Potassium permanganate has been recently proposed as a test for the purity of commercial cocaine salts. [F. Giesel, in *Pharm. Zeitung*, No. 16, 1886]. If to a strong solution of pure cocaine hydrochlorate there is added decinormal solution of potassium permanganate, there is produced a precipitate of a deep, violet-purple color, consisting of a permanganate of the alkaloid. The salt is very unstable, and if left to itself decomposes spontaneously in a few hours, leaving behind a deposit of the dark brown hydrated peroxide of manganese.

If examined with a microscope when first thrown down, the precipitate will be found to consist, wholly or in part, according to the strength of the cocaine solution, of translucent violet-red crystals, of great beauty. These assume the form of rhombic (nearly rectangular) plates, of which several are frequently grouped in a rosette-like arrangement. A solution containing 5 per cent. of cocaine hydrochlorate yields at once a copious deposit of crystals. Solutions containing 2 per cent. of the salt gave crystals after a short time. When the proportion of cocaine was reduced to 1 per cent., crystals formed only as evaporation took place, and a solution of one-half this strength yielded only a few crystals. In all cases there appeared simultaneously with the crystals amorphous floccules of the manganic hydrate, and the crystals would shortly disappear, leaving behind the same unsightly residue.

If the solution containing the deposit is heated to boiling, the same change takes place at once, but the decomposition of the salt is not attended with the evolution of any peculiar odor.

The behavior of impure products will vary, naturally, with the nature of the impurity. The amorphous cocaine hydrochlorate, which is now, however, not often met with, generally manifests its impurity by an immediate reduction, in the cold, of the permanganate solution. The first drop or two of the reagent produces a brown discoloration

in the fluid, and the precipitate thrown down by an excess is more or less brown, instead of being of a distinct violet purple or red.

On heating the mixture cautiously, there is developed also in solutions of these impure products an odor in some cases resembling that of the oil of bitter almonds, in others like that of crude cocaine. The development of this foreign odor is interfered with, at least in some cases, by an excess of the reagent.

Pure cocaine salts, I believe, are now abundant in the market, but occasionally we meet with products reasonably white and free from any apparent admixture, which are nevertheless very impure. The hydrochlorate is now generally offered in the form of hydrate crystals, and these, when white, well formed and dry, are presumably pure, although they are rarely quite free from odor.

The characters which a pure salt hydrochlorate of cocaine should possess may be stated as follows:

It should be nearly or quite odorless; especially it should not have an acid odor, or one resembling benzoic acid. The reaction should not be strongly acid to litmus. The salt should dissolve in sulphomolybdic acid without producing any transient brown coloration, or any immediate coloration whatever. It should dissolve also in sulphuric acid to a colorless solution. A 2-per-cent. solution of the salt should not become brown on addition of a drop or two of decinormal solution of potassium permanganate, neither should the solution develop any strong foreign odor on heating after the addition of a larger quantity of the permanganate. The precipitate produced in stronger solutions by permanganate must be of a clear, violet-purple or red color, and must consist, at least in part, of distinct rhombic crystals of cocaine permanganate.

April 21, 1886.

NOTE ON COCAINE AND ATROPINE.

By Professor Flückiger.

In my paper, *Pharmaceutical Journal* of January 16, p. 602 (see Am. Jour. Phar., March, p. 129), mentioned briefly that cocaine produces a white precipitate in mercuric chloride, turning red after a few hours, and that the said alkaloid is unable to redden phenolphtalein paper. Having recently been presented with excellent specimens of cocaine by my friend, Dr. Squibb, of Brooklyn, I applied the above

tests to them. One of the samples consisted of the crude alkaloid made in South America, which, it is true, contains 43 per cent. of matter insoluble in ether. This impure cocaine immediately developed the red coloration on moist phenolphtalein paper; not so the other specimen of cocaine carefully prepared in Dr. Squibb's laboratory.

Cocaine is not very stable; it is a well-known fact that solutions of that alkaloid or of its salts do not keep for a long time without decomposition. If the purest cocaine be dissolved in water and evaporated, the residue, after having repeatedly undergone this treatment, will no longer display an alkaloid reaction on litmus paper, but it then slightly *reddens litmus.*[1] This experiment proves that *cocaine already splits up by the mere influence of boiling water.* I demonstrated this much more strikingly by enclosing a little cocaine with, say, about five times its weight of water, and heating it for a week in a closed tube, only in a temperature of scarcely 100° (212° F.). When the tube was opened, the liquid showed now a *very strongly acid reaction.* The alkaloid must have been decomposed, in all probability into benzoic acid and ecgonine. I do not know whether the latter, in the free state, has any action on litmus, but from my experiment it would appear very probable that it has not; at least, the acid reaction of the acid (benzoic, no doubt) produced under the above-mentioned conditions is not altered by the presence of the other product of decomposition—ecgonine probably.

I thought it worth while to examine *atropine* in the same way. This alkaloid, as I have shown in my paper in the *Pharmaceutical Journal,* January 16, 1886, p. 602 (see Am. Jour. Phar., 1886, p. 129), displays a very decided alkaline reaction, both with regard to litmus *and phenolphtalein.* This was no longer the case when I heated the atropine in a closed tube with water for a week. The solution, however, did not redden litmus, but, on the other hand, it no longer displayed an alkaline reaction, neither on red litmus paper nor on phenolphtalein. The said aqueous solution of atropine, moreover, produced no precipitate at all in the solution of mercuric chloride (see my paper just alluded to). It is evident, therefore, that *atropine, as well as cocaine, is decomposed merely* by the prolonged influence of water at a temperature of nearly 100° C.

The reactions which I mentioned may prove very interesting theoret-

[1] See Notes on Cocaine, etc., by Dr. Paul, *Phar. Jour.*, xvi., (Oct. 17, 1885), p. 325.

ically, but the practitioner will object that they are of little use to him. There is another test for cocaine, which will be found in the *Pharmaceutische Zeitung* of Berlin, February 27, 1886, p. 132. Dr. Giesel states that 1 centigramme of hydrochloride of cocaine dissolved in 2 drops of water is precipitated by a solution of potassium permanganate (1 in 330), a violet insoluble salt of the alkaloid being produced. I find that statement quite correct; sometimes very fine microscopic crystals of the salt make their appearance. Having tried, on the other hand, morphine, strychnine, and quinine, I ascertained that they cause simply the permanganate to be reduced without yielding an alkaloidal permanganate. Dr. Giesel's fine test is therefore very characteristic for cocaine.

If cocaine or its salts are heated with sulphuric acid (1·84 sp. gr.) an abundance of white acrid vapors are given off; on cooling they deposit crystals of benzoic acid on the walls of the tube. This reaction may also be performed with a minute quantity of the alkaloid.

I cannot speak so favorably with regard to another test, which has recently been recommended by Dr. Lenz, in the *Zeitschrift für analytische Chemie* of Fresenius, xxv. (1886), p. 31. On melting cocaine with caustic potash, Dr. Lenz noticed a yellow or brownish coloration. It seemed to me that this reaction is not very characteristic, inasmuch as many other substances can afford a similar hue when treated in the same way.—*Phar. Jour. and Trans.*, March 20, 1886, p. 800.

THE PRESENCE OF CINCHONIDINE IN THE QUININE SULPHATE OF COMMERCE.

By A. J. Cownley.

The statement lately made by Dr. de Vrij, that all the quinine sulphate of commerce contains more than 5 per cent. of cinchonidine sulphate, not being in accordance with the general experience of those conversant with the subject, it may not be inopportune to publish some results obtained in the examination of samples of commercial quinine sulphate in the course of the last ten years. The method of analysis by which they were obtained is sufficiently delicate to admit of the detection of one-thousandth part of cinchonidine sulphate (*Phar. Jour.* [3], vii, p. 654, see Am. Jour. Phar, 1877, p. 202.)

This publication is the more necessary from the fact that the author of the statement referred to has arrived at his conclusions from results

obtained in endeavoring to determine the amount of cinchonidine in commercial quinine sulphate by a certain optical method which is not accepted as giving accurate results.

The samples are referred to by numbers, and the following are the results obtained:—

Table A.

No.	Water of crystallization. Per cent.	Quinine sulphate. Per cent.	Cinchonidine sulphate. Per cent.
1	15·14	84·86	none
2	15·70	84·30	none
3	15 90	84·10	none
4	14·11	85·89	none
5	15·17	84·83	trace
6	13·49	86·51	none
7	11·70	88·30	none
8	not determined; salt fully crystalized.	——	0·39
9		——	0·61
10		——	4·60
11	13·86	84·64	1·50
12	16·12	83·88	none
13	14·70	82·90	2·40
14	12·00	88·00	trace
15	13·90	84·90	1·20
16	13·98	84·82	1·20
17	12·40	84·20	3·40
18	13·00	82·40	4·60
19	15·10	81·50	3·40
20	13·32	85·81	0·87
21	14·90	80·88	4·22
22	14·20	84·81	0·99
23	15·25	81·59	3·16
24	13·67	81·43	4·90
25	8·10	87·35	4·55
26	10·37	84·19	5·44
27	15·40	79·50	5·10
28	12·64	82·86	4·50

These results, therefore, do not bear out the statement that all the sulphate of quinine of commerce contains more than 5 per cent. of cinchonidine sulphate, for out of nearly thirty samples examined at different times, the average proportion of cinchonidine found only amounted to 2.04 per cent.

The circumstance that some samples of quinine sulphate of inferior quality contain an undue proportion of cinchonidine is now well known, and this fact was first pointed out by Dr. Paul some years ago (*Phar. Jour.* [3], vii, p. 672), when illustrating the defective char-

acter of the British Pharmacopœia test of the purity of this article. But there is no warrant for the assumption that all the sulphate of quinine of commerce is to be included in the same category.

The results of analysis of a few samples of such inferior kinds of quinine sulphate are shown in the following table:

Table B.

No.	Water of crystallization. Per cent.	Quinine sulphate Per cent.	Cinchonidine sulphate. Per cent.
29	15·04	79·04	5·92
30	15·51	76·98	7·51
31	15·40	77·60	7·00
32	15·05	76·97	7·98
33	13·80	78·05	8.15
34	15·03	78·03	6·94
35	15·28	78·24	6·48
36	15·60	75·40	9·00
37	14·63	79·57	5·80
38	11·40	74·70	13·90
39	14·98	76·37	8.65
40	15·95	77·39	6·66

The samples referred to in this latter table were in all probability liable to suspicion; but, with the exception of one, even these do not appear so bad, as regards the amount of cinchonidine sulphate, as Dr. de Vrij now represents the whole of the quinine sulphate of commerce to be, whether of English, German or French manufacture. It is, moreover, especially noteworthy, as regards Dr. de Vrij's results, that he has, in all instances, operated upon those brands of quinine sulphate which have the highest repute and have hitherto been found to contain but very little cinchonidine. It may therefore be inferred that Dr. de Vrij has been misled by the method he has adopted and by the speculative grounds upon which his conclusions are founded, so that the data given by him may in reality be regarded as mere exponents of a varying error of observation.—*Analytical Laboratory*, 13 *Fenchurch avenue, E. C.—Phar. Jour. and Trans.*, March 20, 1886, p. 797.

Boric Acid in Diabetes Mellitus.—F. A. Monckton (*Australasian Med. Gaz.*) reports he has cured one case of diabetes mellitus with this drug. The patient was not stringently dieted, but was given seven grains of the acid three times a day, and at the end of ten weeks the sugar had all disappeared from the urine, the specific gravity being reduced from 1025 to 1016. The drug produces no unpleasant effect.—*Cinc. Lancet*, March 6, 1886.

GLEANINGS FROM FOREIGN JOURNALS.

By Geo. H. Ochse, Ph.G.

Non-poisonous Substitute for Oxalic Acid.—Hager recommends a mixture of equal parts of partly desiccated alum and citric acid as a substitute for oxalic acid. The mixture must be reduced to a fine powder, and might be dispensed where oxalic acid is asked for and the dispenser has his doubts regarding the intention of the purchaser.—*Phar. Rundschau*, xii, p. 167.

Sulphanilic Acid in Iodism.—Ehrlich uses sulphanilic acid as a remedy for iodism. Where it is desirable to give iodine for some time, and the patient shows an inclination to iodism he gives it in doses of 3 or 4 gm.; as soon as the patient shows symptoms of iodism he gives 6 or 7 gm. at once. Sulphanilic acid is best dispensed in aqueous mixtures with bicarbonate of sodium, using 2 parts of the alkali with 3 parts of the acid.—*Phar. Rundschau*, xii, p. 167.

To Clarify Shellac Solutions mix with ¼ volume of benzin, allow to stand one hour, agitating occasionally. The mixture separates in two layers; the benzin layer is decanted and the shellac solution slightly warmed to free it from the odor of benzin. By treating the coarsely powdered shellac with ether before dissolving in alcohol, the operation is facilitated.—*Phar. Rundshau*, xii, p. 192.

Butter Coloring.—Orlean, better known as annatto extract, is prepared by digesting 2 parts of curcuma in 10 parts of olive oil, and filtering.—*Phar. Rundschau*, xii, p. 192.

Iodol Gauze.—Iodol gauze is prepared by saturating gauze in a solution of 1 part each of iodol, resin and glycerin in 10 parts of alcohol. Iodol is odorless and does not produce intoxication, and hence is preferable to iodoform.—*Phar. Rundschau*, xii, p. 205.

Salicylates.—According to Milone, *barium salicylate* $Ba(C_7H_5O_3)_2 + H_2O$ is prepared by treating a hot aqueous solution of salicylic acid with barium carbonate, and filtering while hot. *Calcium salicylate*, $Ca(C_7H_5O_3)_2 + 2\ H_2O$, is prepared in like manner from calcium carbonate. *Strontium salicylate*, $Sr(C_7H_5O_3)_2 + 2\ H_2O$ in the same way from strontium carbonate. *Magnesium salicylate* $Mg(C_7H_5O_3)_2 + 4\ H_2O$, is prepared by treating a hot solution of barium salicylate with magnesium sulphate, and quickly filtering the hot solution while evaporating. *Zinc salicylate*, $Zn(C_7H_5O_3)_2 + 2\ H_2O$ is prepared like the magnesium salicylate from zinc sulphate. *Cadmium salicylate*, $Cd(C_7H_5O_3)_2 +$

H_2O, in the same way as magnesium salicylate from Cadmium sulphate. *Manganesium salicylate,* $Mn(C_7H_5O_3)_2 + 2\ H_2O$ is prepared like barium salicylate, from magnesium carbonate.—*Phar. Rundschau,* xii, p. 213.

To filter large quantities of water, Coccone proposes to filter the water through a layer (about 25 or 35 c.m. thick) of a mixture of 1 part of oxide of iron and 2 parts of sand.—*Phar. Rundschau,* xii, p. 213.

To remove grease spots from fabrics, benzol-magnesia (prepared by rubbing calcined magnesia with benzol) is recommended. Old spots must be rubbed several times with the mixture before the spots disappear.—*Phar. Zeitschrift für Russland,* xxv, p. 123.

Tests for Lanolin.—Messrs. Benno Jaffé and Darmstaedter give the following tests for lanolin:—(1.) 2 or 3 grains of lanolin and 10 c.c. of a 30-per-cent. solution of caustic soda are put in a flask, and the mixture warmed; red litmus paper placed over the flask should not turn blue. A lanolin containing ammonia is to be condemned. (2.) If 10 grains of lanolin are heated in a porcelain capsule with 50 gm. of distilled water, the lanolin, when melted, floats on top of the water and remains as a clear sediment on congealing. Impure lanolin produces a spongy mass which does not become clear when treated in this way. (3.) The water used in the above reaction, when evaporated, should be free from glycerin. (4.) If lanolin is kneaded under water it takes up over 100 per cent. of water without becoming soapy to the touch, and when rubbed in a mortar, it does not slip off the pistil or spatula.—*Schweiz. Wochenschrift,* 1886, p. 88.

Cocaine Test.—Dr. F. Giesel states that the sulphuric acid test for cocaine is not always reliable, and proposes the following test. If 1 centigram of cocaine hydrochlorate is dissolved in 1 or 2 drops of water, and about 1 c.c. of a 3-per-cent. solution of potassium permanganate added, a violet precipitate is produced, at ordinary temperature, containing but a trace of manganesium binoxide, and when boiled no odor of bitter almonds is perceptible.—*Schweiz. Wochenschrift,* 1886, p. 88.

Cocaine Benzoate.—Bignon states that the benzoate of cocaine is preferable to the hydrochlorate; the anæsthesia produced by the benzoate is more durable, and when applied to wounds it is painless. 1 gm. of the crystallized benzoic acid is saturated by 3 gm. of cocaine. A solution of 1:20 can be prepared by saturation when wanted.—*Bulletin Commercial,* February, 1886–88.

Solution of Caffeine for Hypodermic Injection.—Owing to the in-

solubility of caffeine, pharmacists are sometimes perplexed when making a solution for hypodermic use. Tanret recommends the following:—℞. Sodii benzoatis, 2·95; caffeini, 2·50; aquæ dest., 10 c.c. Mix the benzoate of sodium and caffeine in a mortar and add the water; filter. Benzoate of sodium is preferable to the salicylate. If any trace of iron is present, salicylate of sodium would form a rose-colored solution.—*Répertoire de Pharmacie*, March, 1886, p. 119.

Preparation of Guaranine.—Rochefontaine and Gusset give the following formula for making guaranine:—5 gm. of powdered guarana are mixed with 1 gm. of calcined magnesia, and the whole moistened with water; after twenty-four hours the mass is exhausted with 40 gm. of boiling chloroform, the chloroform distilled or evaporated and the residue treated with boiling water, filtered and evaporated over sulphuric acid. After several recrystallizations, colorless crystals of guaranin are obtained.[1] Yield = 4·5 per cent.—*Chemischtechnischer Central Anzeiger*, iv, p. 322.

Manufacture of Aluminium by Electrolysis.—A saturated solution of aluminium sulphate and a solution of sodium chloride, separated by means of a porous vessel, are acted on by a current from 6 or 7 Voltas and 4 Ampéres. The double chloride of sodium and aluminium formed is decomposed, the aluminium settling on the negative electrode. This method can be employed for aluminium plating and also for obtaining aluminium by a cheap process.—*Chemischtechnischer Central Anzeiger*, iv, p. 322.

THE DETERMINATION OF GLYCERIN.

By William Fox and J. A. Wanklyn.

During an investigation on the constitution of oils and fats, with which we are engaged, it became necessary to make a number of glycerin determinations, and as experiment proved the ordinary methods to be inaccurate, we worked out the method given below, and which is based on the fact that glycerin, oxidized with permanganate of potash in a strongly alkaline solution, gives oxalic acid according to the equation $C_3H_8O_3+O_6=C_2H_2O_4+CO_2+3H_2O$.

The oxalate can be precipitated by a lime salt, and the amount of

[1] A much simp'er process for the preparation of caffeine from guarana was recommended by Dr. F. V. Greene (1877) and by Mr. Feemster (1882), and consists in boiling the guarana with oxide of lead, adding a small quantity of basic lead acetate, and evaporating the filtrate.—*See* Am. Jour. Phar., 1877, p. 332, and 1882, p. 523.—*Editor.*

oxalic acid determined, and the equivalent quantity of glycerin calculated therefrom.

We carry the process out as follows:

The aqueous solution of glycerin (which should not contain more than 0·25 gm. $C_3H_8O_3$) is made strongly alkaline by adding 5·0 gms. of solid caustic potash; powdered permanganate of potash is then gradually added until the solution is of a permanent pink color; the solution is now kept at the boiling point for half an hour, and then the excess of $K_2Mn_2O_8$ decomposed with sulphurous acid, either in solution or the gas may be used. The solution, which should now be colorless, is filtered from the precipitated oxide of manganese, and made acid with acetic acid and boiled; a lime salt is added, and the resulting oxalate collected on a filter and thoroughly washed with boiling water. As the precipitate is not pure oxalate of lime, we determine the oxalic acid in the lime salt by titrating with standard $K_2Mn_2O_8$ in the usual way; with a moderate amount of care this process is very accurate; the difference in several experiments should be under a half per cent., and Messrs. Benedikt and Zigmondy, since we suggested the process, have obtained very satisfactory results, which they publish in the *Moniteur Scientifique Quesneville*, vol. xv., October, 1885.

In the saponification of fats in which it is proposed to estimate the glycerin, care should be taken to have the whole of the alcohol driven off, as dilute alcohol treated with alkaline permanganate gives oxalic acid. It may be mentioned that the acids of the acetic series do not oxidize to oxalic acid with alkaline permanganate, whilst those acids of the acrylic series do.—*Chem. News*, January 8, 1886, p. 15.

Laboratory, 4, Great Tower St., E. C., December 29, 1885.

Phenolphthalein as an Indicator.—By E. Léger (*J. Pharm.* [5], xi, 425–428).—The author has observed that certain organic alkaloïds have no action on phenolphthaleïn; thus the presence of morphine, quinine, etc., does not interfere with the titration of sulphuric acid, the same holds true with regard to hydrochloric and nitric acids. Cicutine and codeine are two organic bases which have been found to affect this indicator. The author details experiments and concludes that—(1.) It is possible to estimate an acid volumetrically as easily when combined with certain alkaloïds as when in the free state. (2.) This estimation may serve within certain limits to indicate the purity of a salt of the alkaloïd.—*Jour. Chem. Soc.*, 1885, p. 931.

GLEANINGS IN MATERIA MEDICA.

By the Editor.

Eriobotrya japonica, Lindley, s. Mespilus japonica, *Thunberg.* the loquat tree or Japanese medlar, has been perfectly naturalized in Brazil, where it grows quite luxuriantly. The yellow, pear-shaped fruit is of about the size of a plum, covered with a silky pubescence, contains two to five blackish-brown glossy seeds, and has a vinous odor and an agreeable sweetish-acidulous taste; by fermentation the fruit yields a vinous beverage. The bruised seeds, treated in the same manner as bitter almonds, yield a distilled water containing 0·05 per cent. hydrocyanic acid, and in appearance and odor closely resembling cherry laurel water, but having a peculiar bitter taste. The leaves of the loquat tree have been found of service in chronic diarrhœa.—*Rundschau Leitm.*, 1886, p. 224.

This species is cultivated, to some extent, in the United States.

Bassia latifolia, Roxburgh; Sapotaceæ. Mahwah flowers having been recommended as food for animals, Prof. Church (*Gardeners' Chronicle*, Jan. 16, 1886) has submitted them to an examination, which indicated in the air-dry flowers the presence of 52·8 per cent. of glucose, 3·2 per cent. sucrose, and only 2.2 per cent. of nitrogen. While thus deficient as a nitrogenous food, they seem to be adapted for the production of alcohol, and are said to be largely used in France for this purpose.

Opionin is present in small proportion in Smyrna opium, and is prepared by O. Hesse by treatment with cold milk of lime, acidulating the solution with acetic acid, concentrating, exhausting the brown mass which precipitates with ammonia, acidulating with acetic acid and crystallizing the precipitate from alcohol or ether. Opionin forms acicular crystals, melts at 227° C., is free from nitrogen, does not dissolve in water, but is soluble in alkalies. By boiling with milk of lime it is converted into an acid freely soluble in water and ether. On fusing opionin with potassa, *opionylic acid* is produced, which crystallizes from ether in thick prisms, is readily soluble in water, melts at 126° C., and in neutral solutions gives, with silver nitrate, an amorphous precipitate, becoming crystallized. Both acids, when in alkaline solutions, yield precipitates with lead acetate.—*Liebig's Annal.*, ccxxviii, p. 299.

Reaction for Codeine and Morphine.—A solution of 1 gm. ammonium selenite in 20 c.c. of sulphuric acid was found to give, with the

above alkaloids, a beautiful green color, which, on the absorption of moisture, changes to reddish brown. A similar but less distinct reaction is obtained with a solution of sodium selenate in sulphuric acid. A number of other alkaloids and glucosides were tested in the same manner, but did not give this reaction.—*Compt. rend.*, c., p. 1543.

Nicotiana persica, Lindley.—Mr. E. M. Holmes has published some notes on the Persian *tumbeki* or *teymbeki*, which consists of the leaves of the above species, and of which the Shiraz variety is the most esteemed, those of Kechan and Teheran being about one-half the value of the former. The species closely resemble N. Tabacum, but its leaves are acute rather than acuminate, and its corolla is club-shaped, has a spreading limb, and is white inside and greenish outside. Teymbeki is smoked in a special apparatus, a kind of water-pipe, called *narghileh* from its resemblance in shape to a cocoanut (narghil), the teymbeki being placed in a small reservoir on the top, and the vapor drawn through a tube which passes to the bottom of the water; it collects above the water and is then inhaled through a long tube.

E. E. Eastes and W. H. Ince have made a chemical examination of different varieties of this tobacco, and obtained the following results:

	Ispahan.	Hidjaz.	Kechan.	Shiraz.
Nicotine	5·4945	2·046	2·909	5·835
Saccharoid matter	2·64	2·85	5·58	3·555
Matter soluble in water	42·0	42·3	39·9	55·6
Insoluble in water	58·0	57·7	60·1	44·4
Ash	22·0	28·5	28·5	26·15

—*Phar. Jour. and Trans.*, Feb. 13, 1886, pp. 681–683.

Oil of Lemon has been examined by G. Bouchardat and J. Lafont, who found, besides a little cymene, several hydrocarbons $C_{10}H_{16}$, the most abundant of which is a citrene boiling near 178° C., having a rotatory power exceeding + 105°, and yielding a solid, optically inactive dihydrochloride. Several terebenthenes present boil near 162° C., and yield monohydrochloride, differing in power of rotation. —*Compt. rend.*, ci, p. 383.

An adulteration of oil of lemon with oil of turpentine may be detected, according to G. Heppe, by slowly heating the oil in a dry test tube with a small piece of copper butyrate to about 170° C., taking care that the temperature does not exceed 180°. The copper salt will dissolve in pure lemon oil with a green color, while in the presence of oil of turpentine a yellow, turbid mixture is obtained, reddish-yellow cuprous oxide being separated. The test seems also to

be applicable for the oils of bergamot and orange peel.—*Archiv d.Phar.*, 1885, p. 349.

Poison of the Nettle.—The irritating poison contained in the hairs of different species is generally regarded to be formic acid in the free state. Prof. G. Haberlandt, of Gratz, in an essay presented to the Academy of Natural Sciences, at Vienna, February 4, 1886, has shown that the irritation is produced by a poison which is dissolved in the cell sap, and the behavior of which proves it to be related to the formless ferments, or enzymes.

Poisoning by Frangula Berries.—Dr. O. Peterson (*St. Petersb. Med. Wochenschr.*) reports the case of a lad who, after eating some berries of Rhamnus Frangula, was seized with vertigo, headache, convulsions, unconsciousness, dilatation of the pupil, rapid, feeble pulse, and faint respiration. The treatment consisted in cold washings, clysters and the administration of ether until consciousness returned, when the stomach was evacuated by emetics. The poisonous effects seem to be due to hydrocyanic acid contained in the seeds.

Rhamnus Purshiana.—A student of the California College of Pharmacy has obtained from this bark small orange-red crystals which, after purification from alcohol, were found by Prof. Wenzell to sublime at 230° C. They dissolve in sulphuric acid with a deep red color without showing a green tinge, and though resembling frangulin to some extent, do not appear to be identical with this compound; neither are they identical with emodin. The principle will be further examined by Prof. Wenzell.—*Phar. Rundschau*, N. Y., 1886, p. 79.

Ferment of Gums.—According to J. Wiesner, gum arabic as well as other vegetable gums and mucilages, such as flaxseed, and those tissues in which cellulose is transformed into gum, contain a diastatic ferment, which converts starch into dextrin and arabin or bassorin, but which does not decompose glucosides, does not convert proteïds into peptones and has no inverting action on sugar; its presence interferes with the conversion of starch into sugar by bacteria or by diastase. By long continued boiling the ferment is decomposed; when boiled with strong hydrochloric acid and orcin, a red color is produced, changing to violet with the production of a blue precipitate, which is soluble in alcohol.—*Monatsh. Chem.*, vi, p. 592–619.

Raffinose and Gossypose, according to C. Scheibler, are identical, have the formula $C_{18}H_{32}O_{16} + 5H_2O$, are dextrorotatory giving $[\alpha]_D = 103.9$, and when inverted by sulphuric acid give identical results.

Raffinose seems to exist ready formed in beet root, and not to be generated on storing the root or during the refining process, as appears to be the view of Loiseau, its discoverer (1876). Gossypose was isolated by Böhm and Ritthausen from cotton-seed cake.—*Ber. Deutsch Chem. Ges.*, 1886, pp. 1779–1786.

Cochineal.—C. Liebermann found in *carmine* nitrogen, averaging 3.7 per cent., of which only about 0.25 per cent. is expelled as ammonia on boiling with diluted alkali, the balance being present as proteïds. The ash amounts to about 8 per cent. and was found to consist of SnO_2 0.67, Al_2O_3 43.09, CaO 44.85, MgO 1.02, Na_2O 3.23, K_2O 3.56 and P_2O_5 3.20. The coloring matter does not appear to be a glucoside. A commercial sample of carmine yielded on analysis: moisture 17, nitrogen compounds 20, ash 7, coloring matter 56 per cent., and traces of wax.

The white covering of silver-gray cochineal consists of a peculiar wax, which in the black cochineal has probably been melted through the use of a high temperature in killing the insect, after which it is partly left as a thin transparent coating. This wax is easily removed from the unbroken insect by boiling with benzol, when on cooling most of the wax will crystallize, and is obtained pure by repeated crystallization from benzol or glacial acetic acid. This *coccerin*, on long continued boiling with alcoholic solution of potassa, yields a white crystalline acid, *coccerylic acid*, which melts at about 92° C., and has probably the composition, $C_{31}H_{62}O_3$. The other decomposition product is cocceryl alcohol, which is also a white crystalline powder, but melts at about 104° C., and seems to have the formula, $C_{30}H_{62}O_2$.

After powdering cochineal, previously exhausted with boiling benzol, ether takes up myristin and a deep red-colored oil, which parts with its coloring matter readily on agitating its ethereal solution with water. The liquid oil amounts to between 4 and 6 per cent., and contains free fat acids. The myristin crystallizes from the liquid fat, and is obtained pure by re-crystallization from hot alcohol; it is present to the extent of from 1.5 to 2 per cent.

The total yield of wax and fats from a sample of silver gray cochineal was 12 per cent. In the unbroken state this variety yielded, from different examples, between 1 and 2 per cent. of coccerin, while black cochineal gave from 0·5 to 1 per cent., and in one case 1.5 per cent. of coccerin; but 4.2 per cent. was obtained from granilla.—*Ber. D. Chem. Ges.*, 1875, pp. 1969–1983.

OIL OF SANDAL WOOD.

By E. M. Holmes, F.L.S.,
Curator of the Museum of the Pharmaceutical Society.

In the early part of the present year my attention was directed to the subject of sandal wood by the fact that there appeared in the druggists' wholesale price lists an oil of sandal wood marked "W. I," and offered at about one-third of the price of the genuine oil. As the genus *Santalum* is not represented on the American continent it was evident that the "West Indian" oil must be obtained from some other plant. The results of inquiries made since then appear to me to possess sufficient interest to be placed on record in the columns of this Journal, and may perhaps be prefaced with advantage by a short account of the species which have hitherto furnished sandal wood.

The genus *Santalum* comprises about twenty species, distributed over Asia, Australia and Polynesia, although others may probably yet be discovered in New Caledonia and New Guinea.

In aspect the trees of this genus bear some resemblance to the Myrtaceæ, in having opposite, mostly entire leaves, furnished with oil glands, and flowers similarly arranged. Like the Eucalypti they have no petals, but differ in the small number of stamens (four or five) to each flower, and in having only three to five seeds attached to a central placenta.

All the species delight in dry, rocky localities, particularly those of volcanic origin, degenerating in their yield of oil when grown in moist situations.

The most westerly species is *Santalum album*, L., a native of India and the islands of Sumba and Timor and other islands in the Eastern archipelago. The most easterly is *S. insulare*, found in the Marquesas Islands and Tahiti. The most northern species, *S. Freycinetianum*, Gaud., is found in the Sandwich Islands, and the most southerly, *S. Cunninghami*, in New Zealand.

The species which have at different times furnished the sandal wood of commerce are as follows:

S. album, L.—This species furnishes East Indian sandal wood and probably also that known as Macassar sandal wood. A variety of *S. album*, the *S. myrtifolium*, DC., which differs in its more lanceolate leaves, and occurs on the mountains in the east of Madras, is also a source of a sandal wood oil, which possesses comparatively little fragrance.

The interesting account given of sandal wood in 'Pharmacographia' may be supplemented here by some particulars given by Dr. Bidie concerning the distillation of the oil in India, and published in the Pharmacopœia of India (p. 461) from which the following quotation is taken:—

"It (the tree) is carefully protected by Government, and only the trees that have reached maturity, which they do in from eighteen to twenty-five years, are cut down. The felling takes place in the end of the year, and the trees are then stripped of their bark and conveyed to various depots where they are cut into billets, which are carefully dressed and sorted according to the quality of the wood. These billets form the sandal wood of commerce, and are sold by weight at an annual auction, native merchants congregating from all parts of India to make purchases. The pieces that are straight and have most heart wood, fetch the highest price, as the fragrance for which they are so much prized depends on the presence of an essential oil, which is chiefly situated in the dark central wood of the tree. The Mysore Government has long had establishments for extracting the oil, which is sold at the annual auctions along with the wood and chiefly bought up for exportation to China and Arabia. It is procured from the wood by distillation, the roots yielding the largest quantity and the finest quality of oil. The body of the still is a large globular clay pot, with a circular mouth, and is about 2½ feet deep by about 6 feet circumference at the bilge. No capital is used, but the mouth of the still, when used, is closed with a clay lid, having a small hole in its center, through which a bent copper tube about 5½ feet long is passed for the escape of the vapor. The lower end of the tube is conveyed inside a copper receiver, placed in a large porous vessel containing cold water. When preparing the sandal for distillation the white or sap wood is rejected, and the heart wood is cut into small chips, of which about 2 maunds or 50 lbs. are put into the still. As much water is then added as will just cover the chips, and distillation is carried on slowly for ten days and nights, by which time the whole of the oil is extracted. As the water from time to time gets low in the still, fresh supplies are added from the heated contents of the refrigerator. The quantity of oil yielded by wood of good quality is at the rate of 10 ozs. per maund, or 2·5 per cent. It is transparent and of a pale yellow color, and has a resinous taste and sweet peculiar smell, which is best appreciated by rubbing a few drops of the oil on the warm hand. The specific gravity is about 0·980."

Santalum insulare.—A native of the Marquesas and Society Islands. The wood of this species was observed by Captain Cook, in his voyage round the world, to be used by the natives of Tahiti under the name of *Eai* or *Eahei*, for perfuming cocoa nut oil.

Santalum Freycinetianum, Gaud.—A native of the Sandwich Islands. Together with its varieties, *ellipticum* and *paniculatum*, and *Santalum pyrularium*, A. Gray, it furnished, for a number of years, the sandal wood of these islands. The natives distinguished only two kinds of the wood, which they called *Lan keokeo*, or white, and *Lan hulahula*, or red. From 1790 to 1820 numerous vessels called at the Sandwich Islands for sandal wood, and as much as $400,000 was realized from this trade in one year by King Kamehameha. The destruction of the trees was carried on in such a reckless manner that when Dr. Seemann visited Oahu in 1849, he saw only a few bushes not exceeding three feet high, at a place called Kuaohe, and only a few isolated specimens were left of the magnificent groves that formerly covered parts of the islands of Hawaii, Mani, Oahu and Kauai. An attempt was subsequently made to sell the scented wood of *Myoporum Sandwichense*, A. Gray, in order to revive the trade, but it did not succeed.

S. Homei, Seem.—The discovery of this sandal wood tree in the island of Eromanga in 1829 diverted the sandal trade to that island. The violent treatment received by the natives from sandal wood collectors led to difficulties which resulted in the death of the celebrated missionary, John Williams, in 1839. This source also became gradually worked out, although in 1859 the wood was still so plentiful that one firm employed sixty men to cut it in the bush. On a specimen of *S. Homei* in the British Museum there is a note in McGillivray's handwriting to the following effect:—"Produces the greater part of the sandal wood shipped from Eromanga, and formerly also from the New Hebrides. Nearly extinct. May, 1859." Another specimen dated February, 1860, bears the remark, "Now done." From this it would appear that this source of sandal wood was exhausted about 1860. Specimens of *S. Homei* also occur in the same herbarium from the Isle of Pines and New Caledonia.

Santalum Yasi, Seem.—The wood of this tree was for a long time purchased from the natives of Fiji by the Tongan Islanders, who used part of it and sold the remainder to the Samoans, by whom it was used for perfuming the cocoa nut oil with which they grease their naked bodies; for this purpose it was first grated on one of the mushroom

corals (*Fungia*).[1] As soon as the existence of sandal wood in Fiji became known to European traders, it was speedily carried away to the Chinese and Polynesian markets, so that in 1816 there was scarcely enough left for home consumption, and to save the tree from extinction, one was planted in the gardens of the Mission Station at Bua, in Vanua Levu, the island where it was most abundant. From this tree Dr. Seemann obtained the specimens used for illustrating the plant in 'Flora Vitiensis.' In 1840 the tree was so rare that even the Fijians paid fancy prices for pieces of the wood. The interior of these islands has, however, not been thoroughly explored, so that it is possible some trees may yet be found there.

Santalum austro-caledonicum, Viell.—The sandal wood of this tree was obtained from Mare in 1841, and from Vate in 1843. In New Caledonia it is known to the natives as *Tibean*. The natural woods having been nearly exhausted in New Caledonia, the tree has lately been cultivated, and a small quantity, valued at £8, was exported from Noumea to France in 1882.

S. Cunninghami, Hook., is said to yield sandal wood in New Zealand.

Exocarpus latifolius, R. Br.—A specimen of the wood of this tree was exhibited as West Australian sandal wood ("*S. latifolium*") at the International Paris Exhibition of 1878, and is now in the Museum of this Society. It possesses but little fragrance.

Australian sandal wood is received in this country from Adelaide and Freemantle. It yields less oil of a less fragrant odor than the wood of *S. album*.

Fusanus spicatus, R. Br. (*Santalum cygnorum*, Miq.) This tree has a wide range through South and West Australia, and a large export of the wood has gone on annually, chiefly to China, the exports in 1884 having amounted to 2620 tons, at an estimated value of £8 per ton, that of *S. album* being about £40 per ton. The export is expected to continue for some years to come before the source is exhausted. There is a duty of about 5*s*. per ton on all the sandal wood exported.

Fusanus persicarius, F. Muell. (*S. persicarium*, F. Muell.), is stated

[1] In reply to an inquiry I made at the British Museum Mr. S. O. Ridley informs me that the species of Fungia most likely to be used is *F. dentifera*, Dana, which is sometimes five inches long, and has large strong teeth. Being elongated it could be readily grasped by the hand, and would answer the purpose well. As a new name for this species will probably soon be published I have not mentioned the species in the text.

by Rosenthal to yield sandal wood in West Australia, and *S. lanceolatum*, R. Br., in North Australia, New South Wales and Queensland, but I can find no account of their exportation.

Eremophila Mitchelli.—Dr. Bancroft presented a specimen of this wood to the Museum of this Society, stating that it was known in Queensland as sandal wood. It has a weak fragrance not exactly like sandal wood, and the heart wood is of a deep brownish-red color.

Venezuela Sandal Wood.—A specimen of this wood was presented to the Museum, together with a fine sample of the oil, by Messrs. Schimmel & Co., of Leipzig, who stated that it came from Puerto Cabello, in Venezuela. It is the source of the W. I. sandal wood oil of commerce. It has already been pointed out in 'Pharmacographia,' second ed., p. 603, that this oil may be distinguished by deviating the ray of polarized light 6·75° to the right, while oil of sandal wood deviates it 18·6° to the left in a column 100 millimetres long.

The name of sandal wood bark having been applied in Mexico to what is probably the bark of a species of *Myroxylon*, and *Bucida capitata* being known in the West Indies, according to Grisebach, as sandal wood, it seemed probable that the name might be applied in Venezuela to some other tree, since the specimen of wood presented to the Society appeared unlike the wood of *Myroxylon* or, so far as I could ascertain, that of Combretaceous trees. Accordingly, I wrote to Mr. R. Conn, the British Vice-Consul at Puerto Cabello, who has kindly forwarded a living specimen of the plant and two dried specimens, but unfortunately neither leaves nor fruit were then obtainable. So far as can be judged from the leaves the plant belongs to the *Rutaceæ*.

As the plant does not appear to exist in the national herbaria at Kew, or at the British Museum, a brief description may be placed on record here. The stem is branched in an irregularly dichotomous manner, the branches being erecto-patent. The bark is thin and brittle, resembling in general appearance that of jaborandi or quassia. The leaves are alternate below, becoming more or less opposite on the twigs. The leaves are five-foliolate and imparipinnate. The leaflets are opposite, with a petiole about a quarter of an inch in length, entire at the margin, thin but somewhat rigid when dry, ovate, lanceolate, and acuminate, somewhat shining above but glaucous underneath. When held up to the light they are seen to contain innumerable oil receptacles, which, like those of jaborandi, vary in size in the same

leaf. The odor of the leaves and bark also recalls that of jaborandi. In shape and venation of the leaves the plant approaches the genus *Spiranthera*, but the leaves are much thinner. Until flowers and fruit can be obtained the plant must, therefore, be considered to be one hitherto undescribed.

Mr. W. Kirkby at my request has kindly cut sections of the wood of *Santalum album*, the Macassar sandal wood, and that from Venezuela presented by Messrs. Schimmel & Co. The first two present very little difference in structure, but the Venezuela wood has the porous vessels arranged in distinct lines, as seen in the transverse section.

Of the Japanese sandal wood mentioned in 'Pharmacographia,' I have been able to ascertain nothing, except that true sandal wood (*S. album*) does not grow in Japan. The only trees mentioned by Franchet and Savatier belonging to the order in that country are *Exocarpus latifolia*, R. Br. (*Santalum latifolium*), and *Buckleya lanceolata*, Miq., but neither of these appear to have native Japanese names, and presumably are not used like sandal wood. Nor have I been able to ascertain what wood it is that is exported from Nossi-be under the name of sandal wood, or the source of the kind exported to this country from Zanzibar, but I am informed by a distiller of sandal wood oil that the latter is considered almost worthless for purposes of distillation.

Oil of Sandal Wood.—Of all the different species of sandal wood above mentioned there appear to be only two used at the present time as sources of the volatile oil of commerce (unless the wood yielding the Macassar oil proves to be derived from a distinct species), viz., *Santalum album*, furnishing the East Indian and Macassar oil, and the Venezuela tree furnishing West Indian "Sandal wood oil." Inquiries kindly made for me by Mr. C. Umney show that all the sandal wood during the last two years imported into this country has come from Bombay, except two lots from Zanzibar, offered on February 19 and April 16 of 1884, and a small quantity from Champion Bay, but these were regarded as of indifferent quality.[1] The Bombay sandal wood as imported, varies so much in yield of oil that those who are accustomed to buy the wood for distillation are often greatly

[1] I learn from another source that sandal wood from the Pacific Islands and Australia has very little scent, and is used in this country for furniture and cabinet work only.

deceived in their estimate of its yield. Mr. Umney states that the largest percentage obtained by him has been 4·5, but that sometimes less than a third of this quantity will result from careful distillation. The amount obtained also greatly depends upon the fine state of division to which the wood is brought before distillation. This is effected by first incising or chipping the logs by powerful machinery, and then disintegrating them with special tearing or rasping apparatus or with mill stones.

The Indian oil, in Mr. Umney's opinion, is imported into this country to the extent of not more than 1500 lbs., and often reaches England in a discolored state, containing fixed oil and traces of water, and is rejected by wholesale druggists for medicinal purposes, the whole import being purchased for use in perfumery.[1]

The essential oil used in this country realizes a higher price than either Indian or German oil; the latter in some cases contains oil from cedar wood or inferior sandal wood mixed during the process of distillation. Mr. Umney believes that the continental distillers are far in advance of the British in their superiority both of plant and of the knowledge necessary for the production of this and other essential oils, two well known German firms probably distilling three-quarters of the whole quantity used in Europe.

The above statement concerning the adulteration of oil of sandal wood having reached me from several sources, I obtained a sample of the oil, as well as a number of commercial samples of sandal wood oil, with a view to ascertain what variation might exist in their specific gravity. Examined at my request by Mr. W. H. Ince the following results were obtained:[2]—

Distilled in	Sp. gr.	Source.
1. Germany	·9797	E. Indian wood.
2. Germany, same firm	·9754	E. Indian wood.
3. Germany, different firm	·9756	E. Indian wood.
4. Germany, same firm as 1, 2,	·9738	Macassar wood.
5. Germany, same firm as 1, 2,	·9650	W. Indian wood.
6. English	·9713	E. Indian wood.

[1] According to Dr. Dymock as much as 12,000 lbs. of this oil are imported into Bombay from the Malabar coast, the oil being worth 8½ rupees per lb., and it is used chiefly for perfumery.

[2] I am informed by Mr. A. C. Abraham that two samples of the oil purchased in London gave respectively the specific gravity ·9753 and ·9771. The German specimens were obtained from firms of the highest reputation.

It will be observed that with the exception of No. 5 all the specimens were of higher specific gravity than that recognized in the new British Pharmacopœia, 0·96, although lower than a sample obtained from the India Museum, and which had a specific gravity of ·9901. The Pharmacopœia of India gives the specific gravity as ·980, and the United States Pharmacopœia ·946. It is probable, therefore, that none of the samples examined by Mr. Ince could have been adulterated with cedar wood oil, since the addition of that oil (of specific gravity ·9480) would have lowered the density. The low specific gravity given in the United States Pharmacopœia indicates, however, the possibility of the West Indian oil being used extensively in that country. This supposition agrees with the information I have received from distillers of the oil, that this oil is chiefly exported to the United States. Mr. T. Farries also informs me that it has very little sale either in this country or in Australia.

The oil of cedar wood obtainable in commerce is even more free from color than sandal wood oil, and if prepared, as I am informed, from the refuse of cedar pencil works, is probably rectified carefully to free it from color, since the oil distilled from a closely allied species, *J. Bermudiana*, in Jamaica, by M. Bowrey, judging from a specimen recently presented by him to the Museum of this Society, has a reddish brown color. A sample of oil of cedar obtained in English commerce has been, at my request, examined in the Society's laboratory by Mr. W. H. Ince, who finds that it has a specific gravity of ·9480, and treated with various reagents presents, as compared with a sample of East Indian oil of sandal wood of specific gravity ·9901, received from the late East India Museum, the following characters :—

	Cedar oil.	Sandal wood oil.
Concentrated sulphuric acid	Burnt sienna color.	Brown with black clots.
Chromic acid	Brown with black clots.	Ditto.
Nitric acid	Brown color.	Brown color.
Concentrated solution of chloride of zinc	No result.	Makes it gelatinous.
Solution of bromine in chloroform	No result.	No result.
Mercuric chloride	No result.	No result.
Hydrochloric acid	No result.	No result.

The specific gravity of oil of cedar wood being considerably lower than that of sandal wood, it occurred to me that it would be impor-

tant to determine the quantity of the former that could be added to sandal wood oil without being readily detected by the difference in specific gravity. Mr. Ince kindly made some experiments for me with this end in view. These were conducted in a room, the temperature of which was 65° F.

The addition of 10 per cent. of cedar oil was found to lower the specific gravity of the oil from the India Museum to ·9789, or rather higher than the average specific gravity of the "East Indian" oil of commerce.

In order to see if this quantity of adulteration could be detected by the greater or less solubility of the oil in alcohol, some experiments were made on the solubility of the various oils with alcohol of different strengths. From these experiments it results that cedar wood oil forms a white cloudy mixture with its own volume of methylated alcohol of specific gravity ·839, while No. 1 (see table) is perfectly soluble; but one volume of an equal mixture of sandal wood oil and cedar oil under the same condition dissolves perfectly.

It being thus evident that sandal wood oil might be adulterated with half its volume of cedar oil without being detected by the use of spirit of this strength, proof spirit was next tried, but neither oil being perfectly soluble in it, a mixture of one part of proof spirit and three of rectified spirit was used. This had a specific gravity of ·920. With this solvent the following results were obtained:—

Nos. 1 and 3 dissolved in an equal volume of it. Of the oil from the India Museum and No. 6, one c. c. required 1·1 c.c. to dissolve it Of No. 4, one c.c. required 1·3 c.c. of the solvent.

One c.c. of oil of cedar required 5 c.c. for solution, but 10 per cent. of the latter oil added to the India Museum oil increased its insolubility very slightly, 1 per cent. requiring only 1·3 c.c. of the solvent.

Conclusions.—From the above facts it appears that whilst oil of cedar may be recognized by its insolubility in an equal volume of alcohol of specific gravity ·920, its admixture with sandal wood oil to the extent of 10 per cent. cannot be easily detected.

It is quite possible that the higher specific gravity and less solubility of the oil from the India Museum may be due to an admixture[1]

[1] Tested for sesame and cotton seed oils negative results were obtained. But the greater insolubility of the Indian oil and higher specific gravity indicates the probability of fixed oil being present in it.

of some fixed oil, possibly of sandal tree seed oil, which is used for lamp oil in Mysore. This question, however, can only be settled by the distillation of the wood and examination of the oil in India by a competent chemist.

The West Indian oil, as shown in 'Pharmacographia,' may be detected by its optical properties, and is probably derived from an undescribed rutaceous tree.

The specific gravities obtained indicate that the figure given in the B.P. is too low.

The oil originally recommended for use in medicine by Dr. T. B. Henderson in the *Medical Times and Gazette*, (June 3, 1865, p. 571) was that f *S. album* var. *β. myrtifolium*, the wood of which is said ('Pharmacographia,' 2nd edition, p. 602) to be nearly inodorous. But it is only during the last few years that sandal wood oil has extended its reputation widely. The question arises therefore, is the therapeutic property of the oil due to true oil of sandal wood, to oil of cedar, or to the oil of the Venezuela tree? The species of the genus *Juniperus* are known to have physiological effects on the urinary organs, and cedar wood oil may be possessed of as great, or greater, therapeutic value than the sandal wood oil. Since all these oils are to be met with in commerce, it would be more satisfactory to know which is the most valuable remedy, but this point is one to be determined by the medical profession.—*Pharmac. Jour. and Trans., March* 27, 1886, *p.* 819-822.

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, April 20, 1886.

The seventh meeting of the present series was held this day; Mr. Wallace Procter in the chair. The minutes of the last meeting having been read, and no corrections being required, they stand approved.

The following donations to the library from our fellow member, Mr. A. B. Taylor, were placed on the table: A copy of the first edition of the United States Dispensatory, by Drs. Wood and Bache; Noads' Chemical Analysis, Parts 1 and 2; Cooke's Chemistry; Lecture Notes for Chemical Students, by E. Frankland; Précis d' Analyse pour rechercher des Altérations et Falsifications des Produits Chimiques et Pharmaceutiques, par Gellée; also quite a number of fine steel engravings of several distinguished scientists, which the actuary was empowered to have arranged in a suitable book for their better preservation.

The actuary referred to the question of *ultramarine in sugar*, which had been alluded to in the last meeting; since then he made inquiries at the Franklin Sugar Refinery and was informed that ultramarine is used only to correct the

yellowish tinge which exists in the sugar refined from certain inferior grades of stock; the persistence with which this color adheres to the sugar is such that it can only be hidden by the supplementary bluing of the mass. But the sugar branded crown A or crystal A is perfectly pure and will be all that is needed; it is worth about one-eighth of a cent more than the next best grade. These two brands of sugar are refined from the best raw stock which will show 94 or 96 per cent. of pure sugar before refining. It was asked if these sugars were not soft sugars, and it was stated that such was understood to be the case.

A paper entitled *Laboratory Notes* by Mr. A. H. Cohn, of the graduating class of this year, was read by him, and referred to the committee on publication.

Prof. Maisch stated that this paper only enforced what he had so frequently urged upon young men, that is, to prepare everything possible in their own stores themselves, thus enabling them to assure their patrons and the physicians who entrust their prescriptions to them, of the quality of the articles dispensed, and this he thought ought to apply to many chemical as well as most galenical preparations. Mr. Procter stated that his own experience was that it was economical as well as proper; for he found that in the matter of fluid extracts he could make and afford to sell, strictly first-class articles at the same prices as manufacturers of first-class charged for their goods.

A prescription was submitted with the question: what was the result and what should be the appearance of it when finished. It is as follows:

℞ Potassii Carbon..... ℈i
Ext. Buchu fluid..... ℥ij
M. Sig.—A teaspoonful in water.

A number of those present thought it all right and that it would be quite clear and sightly, but experience showed that the alkali in a few moments caused a soapy deposit which adhered to the sides and bottom of the bottle. Prof. Maisch said that it would be well if some one would experiment and ascertain the character of the precipitate. Mr. Procter offered to do this.

Prof. Maisch called the attention of the meeting to *Lanolin*, the fat prepared from suint, the soap obtained by washing sheep's-wool; the specimen was made by Messrs. T. Metcalf & Co, of Boston, and labelled *Agnine*, as a registered trade mark. The very rank odor which adheres to it very persistently is unfortunate, but the speedy absorption of the fat when rubbed upon the skin, and the entire disappearance of the odor as soon as the grease is absorbed, are quite noteworthy. A number of experiments have been made to remove the odor and dark color. One specimen had been digested with charcoal for two months; another had been treated with peroxide of hydrogen which had removed its odor very greatly, but it seems desirable to free it entirely from both odor and color.

Two months ago Prof. Maisch spoke of the *Raiz del Indio* and expressed the opinion that it was the same root as had been examined by Mr. Voelcker in 1875. Under the name of Cañaigre root he had received several specimens which were identical with Mr. Voelcker's root and with the root of Rumex hymenosepalum, received from Mr. Wm. Saunders, superintendent of gardens in Washington. Recently, Mr. Clifford Richardson, assistant chemist in the Agricultural Department at Washington, had furnished a copy of the analysis published in the annual report of that department for 1878, p. 119; this analysis,

like that by Mr. Voelcker, shows the presence in the root of various derivatives of chrysophanic acid or allied compounds, like emodin and erythroretin, the quantitative results being: Emodin, trace; yellow resin, ·93; red substance soluble in alcohol, 10·48; sugar and red substance, soluble in water, 10·44; rheotannic acid, 23·45; gum, pectin and brown color, 6·41; albuminoids, 5·21; aporetin, 4·78; starch, 18·00; cellulose, 4·52; ash, 4·38, and moisture, 11·17; total, 99·77.

Mr. Procter asked if all *tannin producing substances* were equally valuable for tanning in proportion to the tannin they contained. Prof. Sadtler said that he thought that they were not, and that hemlock and the oak barks were almost the only useful ones, and sumach was somewhat used; chromate of sodium had been found good only for wash leather and thin skins, and it was not valuable for general tanning purposes. Prof. Maisch stated that, in tropical countries, many substances, almost unknown in other localities, were used for tanning, such as the bark of many trees, certain leguminous fruits, different parts of the clove tree, and other myrtles.

Prof. Maisch exhibited specimens of two species of *potato*, one being Solanum tuberosum var. boreale, which is indigenous to Arizona (see AM. JOUR. PHAR., 1884, p. 344), and the other Solanum Maglia, which is indigenous to South America, from Chili southward, the specimens having been sent by Mes-rs. Sutton & Sons, of Reading, England. The first species mentioned had been cultivated by Prof. Maisch for two years without blooming, and producing very few tubers, but numerous and very long, thin rhizomes; he attributed this to the fact that the plants had been kept well watered, while they should have been grown in rather dry soil; the second species, however, is stated to grow in low and even swampy ground.

Prof. Trimble exhibited some *oil of maize*, obtained from the corn grain by pressure with the presses usually employed for making linseed oil. Its sp. gr is ·922. It has a bright yellow color and a slight peculiar odor.

Mr. Walling asked the question whether *bathing whiskey* was legitimate if made by using diluted alcohol, colored with caramel, and odorized with a small quantity of fusel oil. The reply was made that such an article was sold by some of the members, and had given satisfactory results to the physicians who prescribed it; but others present sold for this purpose commercial raw whiskey, which appeared to be better for bathing purposes than diluted alcohol.

This question opened the other one of the character of *whiskey* suitable for medicinal use internally, and the statement made was that Gibson's whiskey had proven the best, but probably was not superior to other pure whiskies at least two years old, and purchased from the manufacturers in original packages of a barrel; it of course becomes a year or two older before it is all sold off.

THOS. S. WIEGAND, *Registrar.*

Phytolacca Decandra in Orchitis.—According to the *Lancet*, the fluid extract of *Phytolacca decandra* is used internally for orchitis, in doses of from 4 to 6 minims, every three or four hours A salve made of the extract mixed with extract of belladonna is also rubbed into the skin over the affected part. The root is said to have antisyphilitic and antiscorbutic properties.—*N. Y. Med. Jour.*, Jan. 23, 1886.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

The St. Louis College of Pharmacy held its twentieth annual commencement on the evening of March 16th, the degree of Ph. G. being conferred upon thirty-three candidates. Prof. Wall delivered the valedictory address. The Alumni prizes were awarded to R. Kring, of the senior class, and to E. E. Hunter, of the junior class. A reunion of the graduating class took place on the preceding evening, at a supper provided for by the faculty.

Cincinnati College of Pharmacy.—The fourteenth annual commencement occurred on the evening of March 18th, when addresses were delivered by the President, Mr. Geo. W. Voss, by Hon. W. A. Davidson, and by Prof. Judge. The prizes offered by the Board of Trustees, consisting of a silver medal for the best junior examination, and a gold medal for best senior examination, were awarded, the former to Jos. W. Hall, and the latter to E. A. W. Stahlhuth. The professors' prizes, offered for the best examinations in the respective branches, and consisting of gold medals, except the materia medica prize, a microscope, were distributed, in theoretical and analytical chemistry, to C. S. Ashbrook; in theoretical pharmacy, to E. A. W. Stahlhuth; in practical pharmacy, to F. A. Müller; in materia medica, to E. A. W. Stahlhuth, and in botany, to Mrs. C. D. Platt. The following gentlemen received the degree of Ph. G.: C. S. Ashbrook, Ada, O.; Frank H. Coblentz, Springfield, O.; Edward Doerr, Cincinnati, O.; Chas. A. Fieber, Cincinnati, O.; Warren W. Ford, Cincinnati, O.; John Krause, Cleveland, O.; O. E. Moeglich, Columbus, O.; Ferd. A. Mueller, Indianapolis, Ind.; Joseph W. Plaster, Lafayette, Ind.; Otto E. Plath, Sleepy Eye, Minn.; A. W. Schneider, Cincinnati, O.; E. A. W. Stahlhuth, Columbus, Ind.; Fred. H. Swift, Oberlin, O.; William Valentine, Cincinnati, O.; E. T. Warnock, Greenup, Ky.; Charles L. Zimmermann, Madison, Ind. After the close of the exercises the graduates were entertained at a banquet, provided by the Alumni Association of the College.

New York College of Pharmacy.—The fifty-sixth annual commencement took place at Steinway Hall, on the evening of March 30th, the degree of Ph.G. being conferred by the President, E. McIntyre, upon eighty-four candidates. An address to the graduating class was delivered by Hon. Judge J. R. Brady. G. A. Palmer, J. L. Peck and O. C. B Grom received the Alumni prizes, consisting of a gold, a silver, and a bronze medal.

Massachusetts College of Pharmacy.—The eighteenth annual commencement takes place at Meionaon Hall, on the evening of March 15th.

A New Heart-Tonic.—Prof. Wagner recently employed the new heart-tonic, the nitro-salicylate of caffeine, in his clinic in Buda-Pesth, on twelve patients (*Oroosi Hetilap.*, No. 32, 1885). The daily dose varied from 3 to 18 grains. The results were the same as those observed by Riegel. The remedy is a rival of digitalis, but has the great advantage of being more rapid, and never accumulative in its effect. The only drawback seems to be, that with the discontinuance of the remedy its effect also quickly ceases. At the beginning, but small doses should be administered, as many patients evince a peculiar idiosyncrasy against the drug.—*Med. and Surg. Rep.*, Jan. 30, 1886.

EDITORIAL DEPARTMENT.

Nostrums on the War Path.—We copy the following from the *Philadelphia Record* of April 8th:

"A case of unusual interest to physicians and druggists was tried yesterday in Common Pleas Court No. 4, before Judge Arnold. The point at issue—and of vital importance to the medical fraternity throughout the country—was as to how far a lecturer before a medical class could adversely criticise a patented preparation, and whether he could be held responsible for such criticism.

"Frank E. Engelman, the proprietor of a nostrum (snuffene) for the cure of hay fever, brought suit against Dr. Carl Sieler, of the University of Pennsylvania, for damages alleged to have been sustained on account of a lecture delivered by the defendant on October 14, 1884, before the alumni of the Philadelphia College of Pharmacy, in which he advised his hearers not to use the article manufactured by Mr. Engelman. The plaintiff alleged that in consequence of these remarks the druggists ceased recommending his powders to customers, and in some instances had removed the article from their showcases. He was unable to tell just how much his trade had fallen off, but believed that he had lost $1000, though he did not produce any books to show this. It was offered in evidence that Dr. Seiler had advised the druggists not to use the nostrum, and the following language used by the physician in his description of the article was also produced: 'I don't know what it is. I suppose it is nothing but a little silicate of soda, or a little borax, or quinine and borax; but don't use it or any of these nostrums. They are bad, for the simple reason that they themselves irritate the mucous membrane. They all have, to a certain extent, an effect good or bad, but that effect will not last. Very soon the secretion will cover the mucous membrane again, and the trouble will still be there. Also, very soon the system becomes accustomed to the nostrum and prevents the thorough impregnation of the mucous membrane, having its peculiar effect upon the circulation of the nose itself.'

"The plaintiff called several druggists, with a view of showing that their sales had fallen off in consequence of Dr. Seiler's lecture; but these witnesses could not say that their sales had been curtailed in consequence of any remarks of Dr. Seiler. One druggist testified that he had recommend the article because it was put up in convenient boxes, and was handy to carry in the pocket.

"The defense did not consider it necessary to offer any evidence.

"Judge Arnold charged the jury briefly and ordered them to render a verdict in favor of the defendant. He said that Dr. Seiler's statements before the alumni of the College of Pharmacy was a mere expression of opinion, and that it was devoid of any element of malice. It was the lecturer's privilege, under the circumstances, to give his views to his class, and it was the occasion of the highest privilege for the defendant to give such expression of his views. It was not shown that Dr. Seiler had any malicious motive, and some people might think the defendant did the public a great benefit; but it was not for the Court to say whether he had or not. It was enough for the Court to say that it was the defendant's right to lecture upon the medicine. As there was no evidence to support the plaintiff's case, and as it was not shown that the defendant had acted in a spirit of spite, or had tried to damage the plaintiff, the Court was compelled to direct the jury to return a verdict for the defendant."

While in the above case honest criticism has been upheld, a good deal of honesty seems also to be at stake in another case, which, if ever pressed to prosecution, bids fair to achieve considerable notoriety. We have before us a printed circular, dated Baltimore, March 25th, in which the manufacturers of a nostrum inform the drug trade, and all other dealers in proprietary medicines in the United States, that suits for damages have been instituted against firms in Detroit, St. Louis, and Baltimore, and that "other suits will follow

against all non-secret medicine manufacturers, and wholesale and retail dealers, who make, sell or deal in Iron Tonic Bitters, Brown's Iron Tonic or other Iron Remedies, or medicines containing iron that either directly or indirectly trespass upon our rights as the inventors and owners of the genuine Brown's Iron Bitters." It does not seem to be claimed that the label or wrapper of the nostrum had been copied or imitated, and it appears to be preposterous that the names should be considered an infringement of the copyrighted name of the nostrum. Can it be possible that some of those threatened preparations are to be involved in law suits, because they are *non-secret?* We have often advocated that the demand for family medicines should be supplied by remedies, the composition of which to be known at least in the localities where they are used, and we still believe that if such a plan had been adopted years ago, the country would not now be flooded with secret nostrums, many of which are positively injurious. The course indicated is certainly an honest one, and if pharmacists make preparations of iron and bitter principles, according to formulas which are not kept secret, we sincerely hope that they will be legally protected in their honest endeavors to supply the public with such remedies, in the place of nostrums of unknown composition.

Illinois College of Pharmacy.—We have learned that under this title a charter has recently been obtained in Chicago by Dr. Joseph Cummings, President of the Northwestern University, Messrs. E. H. Sargent, T. H. Patterson, O. Oldberg and others. Whatever causes may have led to the organization of a second College of Pharmacy in one and the same city, they are to be deeply regretted, and we hope that a union of the two institutions may not be regarded as an impossibility. The cause of pharmaceutical education is undoubtedly best served by concentrating, in suitable localities, those interested in one common effort towards the end in view, sinking individual opinions, if necessary, in preference to weakening through division.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Year-Book of Pharmacy; comprising abstracts of papers relating to Pharmacy, Materia Medica and Chemistry, contributed to British and foreign journals, from July 1, 1884, to June 30, 1885. With the Transactions of the British Pharmaceutical Conference at the twenty-second annual meeting, held at Aberdeen, Sept. 6, 1885. London: J. & A. Churchill. 8vo, pp. 566.

Proceedings of the American Pharmaceutical Association at the thirty-third annual meeting, held at Pittsburgh, Pa., September, 1885; also, the Constitution, By-Laws and Roll of Members. Philadelphia. 8vo, pp. 694.

The first one of these annuals was received early in March; the second one has just been distributed. The abstracts of papers published during the year preceding 1st July, occupy respectively 291 and 360 pages; and the minutes, with reports and papers read, 173 pages in the former and 222 pages in the last-named volume. Condensed accounts of the meetings of both Associations were published in the October number, 1885, of our journals, where also a

brief synopsis of the various papers will be found. Several of the papers have been published in full in the JOURNAL. An important addition to the Proceedings is the New York and Brooklyn Formulary of unofficinal preparations, which thus assumes a national character and which will, hereafter, be extended so as to embrace also the unofficinal preparations used in other parts of North America, always provided that those interested will not fail to communicate their observations in this line to the Committee on Unofficinal Formulas, Dr. Chas. Rice, Chairman, College of Pharmacy, 209 East 23d street, New York. The Proceedings contain the phototype of the late Henry B. Parsons, who died shortly before the last meeting. The picture, we understand, was made from a photograph taken several years ago, the last one that could be procured by the committee.

Proceedings of the Illinois Pharmaceutical Association at the sixth annual meeting, held in Chicago, Sept. 22-24, 1885. Chicago: T. N. Jamieson, Secretary. 8vo, pp. 85.

The meeting was noticed on page 632 of the December number of this Journal.

Proceedings of the New Hampshire Pharmaceutical Association at the eleventh and and twelfth annual meetings, held in Concord, Oct. 14, 1884, and Nov. 3, 1885. Concord, N. H. 8vo, pp. 64.

The thirteenth annual meeting will be held in September next.

Erythroxylon Coca and Its Derivatives.—A *resumé* of their history, botanical origin, production and cultivation, chemical composition, physiological action and medicinal preparations; embracing reports on their employment in general and minor surgery, etc., etc. Compiled by the scientific department of Parke, Davis & Co. Detroit and New York. 8vo, pp. 103.

About one-third of the pamphlet treats of the botanical, economical and chemical history of the plant; the remainder, of its uses and those of cocaine in medicine and surgery. It is a very useful and timely compilation of papers on a subject which has attracted considerable attention for several years.

Coca, Cocaine and its Salts: their history, medical and economic uses, and medicinal preparations. By William Martindale, F. C. L., etc. London: H. K. Lewis, 1886. 16mo, pp. 69.

The scope of this little work is similar to that of the preceding one; but the information is given in a necessarily very condensed form, which is more especially the case with the uses in medicine. The little book is handsomely printed in blue ink upon green-tinted paper.

Cocaine in Hay Fever. A lecture delivered at the Chicago Medical College. By Seth S. Bishop, M. D., etc.

Reprint from the Journal of the American Medical Association.

The Druggists' General Receipt Book; comprising a copious veterinary formulary, numerous recipes in patent and proprietary medicines, druggists' nos-

trums, etc., perfumery and cosmetics, beverages, dietetic articles and condiments, photographic chemicals and formulæ, trade chemicals, scientific processes and an appendix of useful tables. By Henry Beasly. Ninth edition. Philadelphia: P. Blakiston, Son & Co., 1886. 16mo, pp. 507. Price, $2.25.

The volume now before us is the revised edition of a work which has been in the hands of druggists for many years, proving its utility and value by the new editions which have from time to time become necessary, and which have been noticed in previous volumes of the JOURNAL. The present edition has been revised and enlarged, and though it covers about the same number of pages as the eighth edition, room has been provided for the new material by increasing the text on each page about three lines.

A Lecture on Piper Methysticum (Kava-kava). By Dr. L. Lewin.

A condensed account of the subject of this lecture will be found on page 138 of our March number. The complete translation made from *Berl. Klin. Wochenschrift*, was published by Parke, Davis & Co.

Asa Gray. 8vo, pp. 16. A biographical sketch of the celebrated American botanist. Written by Prof. C. S. Sargent and published in the *Sun* newspaper, Jan. 3, 1886.

Twenty-seventh Annual Report of the Inspector of Milk and Vinegar, from April 6, 1885 to December 31, 1885. Boston. 8vo, pp. 60.

Outlines for a Museum of Anatomy, prepared for the Bureau of Education. By R. W. Shufeldt. Washington. 8vo, pp. 65.

Esthetics of Medicine. The doctorate address in the medical department of the University of Louisville. By Prof. H. A. Cottell, M. D.; pp. 26.

L'Épilepsie et son moyen curatif. Par H. Bonnewyn, etc. Aven une Introduction par M. le Dr. Hubert Boëns. Charleroi, 1886. 8vo, pp. 19.

A New Departure in Uterine Therapeutics. The Dry Treatment. By Dr. Geo. J. Engelmann. St. Louis. Address before the St. Louis Obstetrical and Gynecological Society; pp. 11.

The Organization of Local Boards of Health in Pennsylvania. By Benj. Lee, A. M., M. D., Ph. D. 8vo, pp. 16. Read before the Philadelphia Social Science Association.

Twenty-fifth Annual Report of the Board of Managers of the Woman's Hospital of Philadelphia. January, 1886. 8vo, pp. 44.

International Electrical Exhibition, 1884, *of the Franklin Institute.*

The following reports of examiners are before us:

Section XI. Steam engines; pp. 32.

Section XXII. Electric signal apparatus, electric registering apparatus, etc.; pp. 96.

Section XXII. Supplementary report on meteorological and other registers; pp. 13.

Section XXIX. Educational apparatus, with which is incorporated Section XIII, apparatus for high electro-motive force. pp. 56.

On the efficiency and duration of incandescent electric lamps. Report of a special committee. pp. 127.

OBITUARY.

Peter Williamson, one of the founders of the Philadelphia College of Pharmacy, died in this city March 6th, aged 91 years. He was secretary at the meeting held at Carpenter's Hall, February 23, 1821, on which occasion the organization of a College of Apothecaries was resolved upon, and he presided over the meeting held February 23, 1871, to celebrate the fiftieth anniversary of its foundation at the present hall of the College. The deceased has served the College faithfully for many years as one of its officers, and though retired from business long ago, retained his interest for its welfare. In other stations he likewise occupied many positions of honor and trust.

Dr. Nathaniel Ranck, who was for many years in business in the southern part of Philadelphia, died March 19th, at the age of 78 years.

Benjamin W. Fetters, who carried on the drug business at Third and Brown streets, died suddenly February 25th, aged 60 years.

Ralph Newton, formerly in business at 20th and Fitzwater streets, died April 13th, aged 74 years.

Notice of the death of the following graduates of the Philadelphia College of Pharmacy has been received:

Louis Dembinski, class 1877, died suddenly March 9th, at his residence, 8th street and Fairmount avenue, aged 57 years.

Henry H. Jacobs, class 1862, a member of the firm of Phillips & Jacobs, manufacturing chemists, died March 24th, at the age of 45 years.

John A. Miliac, class 1866, in business on Master and 24th streets, died there March 27th.

Charles Frederick Zeller, class 1880, died suddenly April 7th, at the age of 28 years. After having been in a wholesale drug store for some time, he was engaged in the store of Prof. Remington, and soon became conspicuous for his studious habits and zeal, which rendered him valuable to the latter as an aid in making arrangements for lecture demonstrations. He graduated with high honors, was elected assistant to the Chair of Pharmacy, and served the College for several years as curator, in which capacity he arranged the cabinet of materia medica. His health failed in the summer of 1884, and during the greater part of the following winter he was able only to attend to a portion of the duties connected with his position. A voyage to Europe in the summer of 1885 restored his health sufficiently to enable him to participate to a somewhat greater extent in the College work. In the afternoon of April 6th he was busily engaged at the College, and in the following night he was seized with hemorrhage of the lungs, which in a short time terminated his life. Ever faithful in the discharge of his duties, modest and unassuming in his demeanor, earnest and persevering in his studies, he was a favorite with the faculty, with the members, and with the students of the College.

VARIETIES.

A Novel Anticoagulant.—Prof. Zunz has presented before the Berlin Physiological Society an ingenious method of retarding the coagulation of blood in the course of experiments upon blood-pressure. It had been shown that the cause of the frequent persistent bleeding seen after the application of leeches is due to the presence of a soluble ferment in the animal. Zunz has found that an aqueous extract of the heads of leeches, injected into the blood stream, not only prevented any interruption of the experiment through coagulation, but in no wise influenced blood-pressure.—*Med. News*, March 27, 1886.

Chloropeptonate of Iron.—The *Bulletin Général de Thérapeutique* describes Dr. Jaillet's experiments which have led him to prescribe and recommend the use of chloropeptonate of iron by hypodermic, rectal, and intravenous injection, and by ingestion. The compound enters the circulatory system and is absorbed into the blood. Chloropeptonate of iron is a chemical combination of peptone and iron perchloride, which does not undergo any change from the gastric juice, nor from the alkalies of the blood. It is absorbed and assimilated just as it is administered, and produces, in consequence, a higher temperature, increased disassimilation, and more copious excretions. The appetite increases, and the patient grows thinner, but the physiological qualities of the blood improve.—*Med. Times*, March 20, 1886.

Unusual Susceptibility to Morphia.—Dr. William G. Eggleston, of Chicago, Ill., reports a case in the *Jour. Amer. Med. Assoc.*, April 10th, 1886, which is interesting on account of the facts that the drug acted in a remarkably short time, and that at times there was no appreciable interval between the anodyne and hypnotic effects. On March 13th, at 8 P. M., I was called to see A. F. H., æt. 44, who was suffering from a very severe attack of sciatica on the right side. I administered morphia, gr. $\frac{1}{4}$ with gr. $\frac{1}{200}$ of atropia. While replacing my syringe in the case the patient threw his arms across his chest, said "All right," and was asleep immediately. This was just four minutes after the injection was made. Being somewhat alarmed at such unusual susceptibility, I aroused the patient and spoke to him. I had no difficulty in awakening him, and he seemed surprised that I had aroused him. He said that the drug had had a similar effect two or three years ago, when he had taken it, and his wife confirmed his statement. Upon this information I determined to set aside my proposed treatment of the case with injections of ether, and to use morphia, with cod-liver oil and phosphorous internally. March 14th, I administered gr. $\frac{1}{4}$ morphia, with gr. $\frac{1}{200}$ of atropia, at 9 A. M. The patient had slept well the night before until about 3.30 A. M., after which the pain began to return slowly. The injections were made superficially behind the right trochanter on the affected side. Within three minutes the patient announced that he "felt it" in his arms—"a kind of numb feeling down through the elbows." Within another minute he said that he was perfectly easy. This time, however, he did not fall asleep. Another injection was made in the evening, the pain being annoying, but not so great as on the previous afternoon. Within a few seconds less than four minutes he began to say that he felt better, but was asleep before the sentence was completed. In the morning he had commenced taking teaspoonful doses of cod-liver oil and phosphorous (gr. i—f ℥ jss).—*Virg. Med. Monthly*, May, 1886.